

# Mining

## CONGRESS JOURNAL



\*

SEPTEMBER  
1946



*The Complete Report*  
OF THE  
**Metal Mining Convention  
and Exposition**

WILL BE PUBLISHED  
IN THE *October* ISSUE OF  
**MINING CONGRESS JOURNAL**

•  
Planned to give the industry the fullest  
possible story of this meeting

•  
*Watch for your October Number*

# Mining CONGRESS JOURNAL

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## THE AMERICAN MINING CONGRESS

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Shown above is a typical installation of a Jeffrey haulage type locomotive in mine service. Heavy duty, rugged Jeffrey locomotives have teamed up with equally dependable Jeffrey Gathering Locomotives, doing a major job of transporting coal from face to preparation plant in a host of mines supplying coal to all industry throughout the nation.



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The type of motive power used, Locomotives, etc., are separated in throughout the nation.



THE NEW

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- NEW** three-in-one backhead.  
(Wet, dry, or blower)
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- NEW** matchless drilling speed
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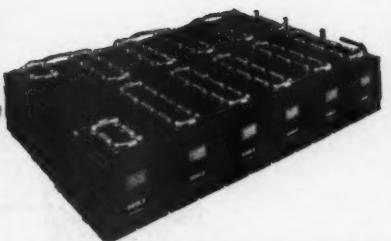
Frontheads available for all standard  
drill steel sections.



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S-824



## SCORING POWER

**Gould Kathanode Batteries  
deliver full power longer**

**MEMO**  
*John:  
Those Kathanode  
powered locomotives  
keep going all day.  
It was smart to  
change. J.W.M.*  
General Manager

Kathanode powered mine locomotives stay in the game, moving at full speed right up to the closing minutes of each working shift. They will not have to be sent to the side lines because of failing battery power.



THE BATTERY PICKED BY ENGINEERS

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Service Centers: Atlanta • Boston • Buffalo • Chicago • Cincinnati  
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**And here is the reason  
why—**



Gould introduced, and for 21 years has developed the spunglass mat. Placed on both sides of each positive plate in the Kathanode battery, these mats hold all useful active material within the grid. There it continues to produce current at 100% or more of the battery's rated capacity.

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Mechanized coal mining can achieve full cost saving only when underground preparation is reduced to a minimum or eliminated. With R & S equipment, which integrates the several cleaning processes in one surface plant, run of mine coal can be handled efficiently, all the way from the largest coarse sizes to the fine coal sizes, permitting complete mechanization underground.

This newest and most modern Roberts and Schaefer Coal preparation plant—at the New East Diamond Mine of the West Kentucky Coal Company—is built around R & S Hydro-Separators for coarse coal  $6'' \times \frac{1}{4}''$  and R & S Hydrotators for fine coal  $\frac{1}{4}'' \times 0''$ . Low cost mechanization underground and efficient coal cleaning on the surface mean additional profits.



*Speaks for itself*

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## You hold Dynamite Costs Down with "Gelex"

Du Pont "Gelex" is an economical dynamite for shooting a wide variety of ores. In most cases it can be readily substituted for more costly gelatins. On a stick-for-stick basis, "Gelex" costs less than gelatins of comparable strength. Check these important points:

**Excellent fragmentation**—Du Pont "Gelex" is a dynamite of high velocity. It has a powerful, shattering action that produces well-broken ore in quantity.

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Try "Gelex." Many miners report that it has helped them increase production at lower cost per shift. Talk

with your Du Pont Explosives Representative.

E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

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### DU PONT "GELEX"

*A product of Du Pont Explosives Research*



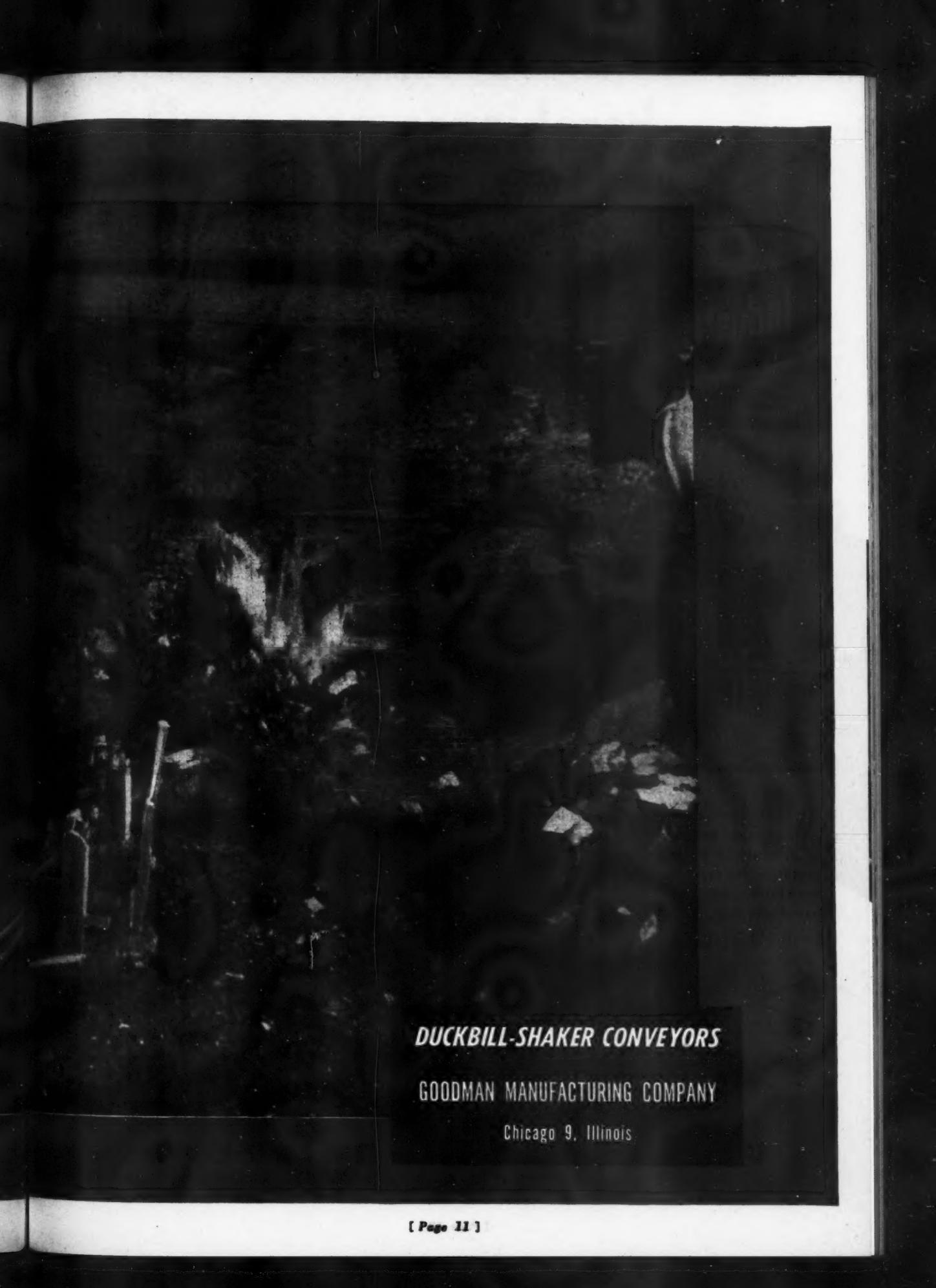
BETTER THINGS FOR BETTER LIVING  
. . . THROUGH CHEMISTRY

Predictable...  
more profitable work-hours  
with a quality-built



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**DUCKBILL-SHAKER CONVEYORS**

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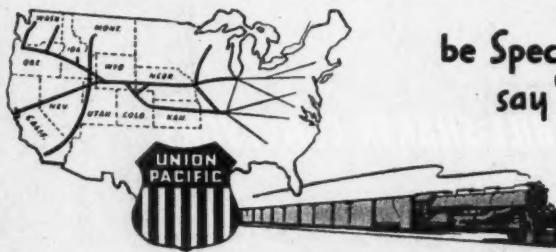


WITH the coming of the railroads, the western frontiers were conquered. They brought men, implements for building homes and towns, transportation for marketing products. Then factories were built. And industries thrived where railroads paved the way.

In the 13 great states served by Union Pacific,

there still is land to be tilled, minerals to be unearthed, livestock to be raised, room for new homes and industrial expansion.

Union Pacific will continue to serve the territory it pioneered, by providing efficient, dependable, safe transportation for shippers over the time-saving Strategic Middle Route.

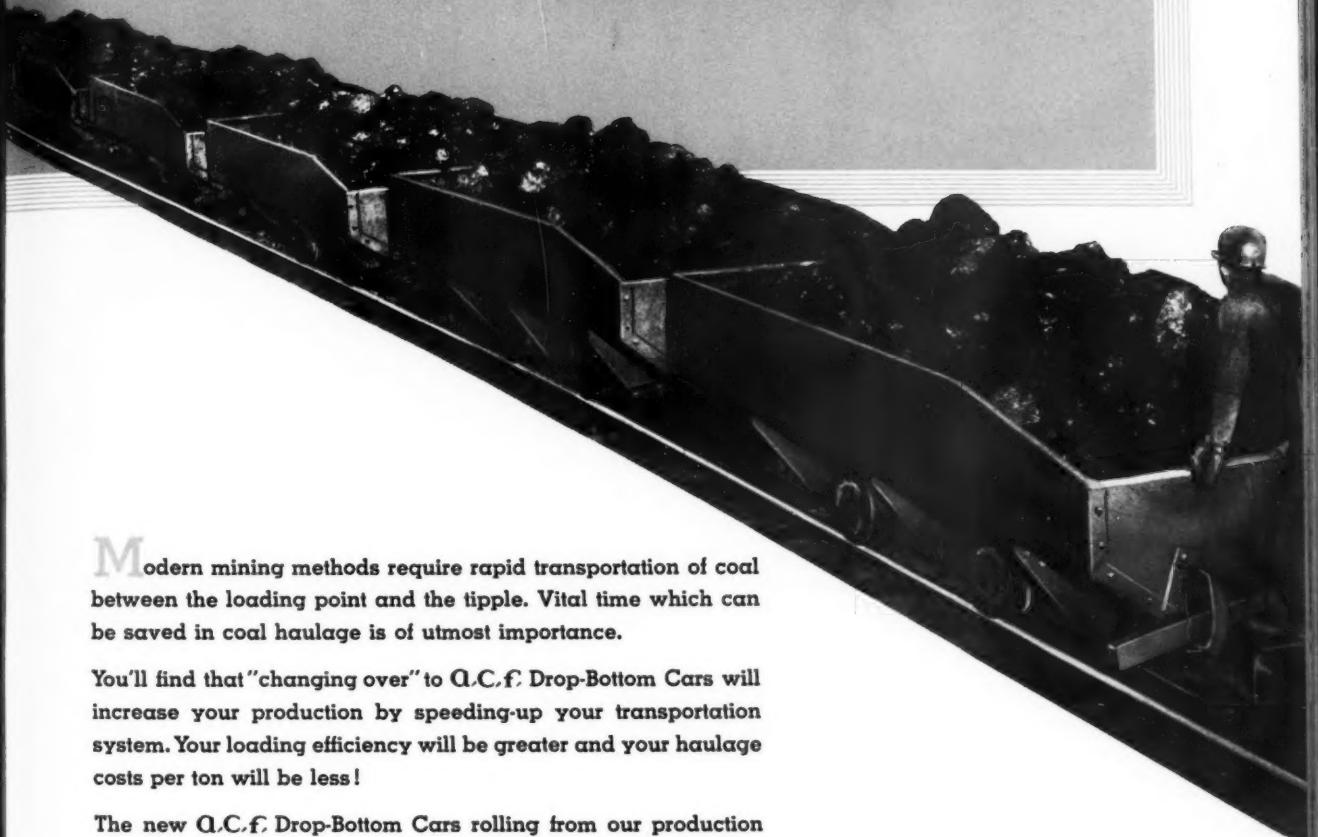


**be Specific -  
say "Union Pacific"**

★ Union Pacific will gladly furnish confidential information regarding available industrial sites having trackage facilities in the territory it serves. Address Industrial Dept., Union Pacific Railroad, Omaha 2, Nebraska.

**UNION PACIFIC RAILROAD**  
*The Strategic Middle Route*

# Have you considered changing over to **DROP-BOTTOM CARS?**



**M**odern mining methods require rapid transportation of coal between the loading point and the tipple. Vital time which can be saved in coal haulage is of utmost importance.

You'll find that "changing over" to Q.C.F. Drop-Bottom Cars will increase your production by speeding-up your transportation system. Your loading efficiency will be greater and your haulage costs per ton will be less!

The new Q.C.F. Drop-Bottom Cars rolling from our production line today are strictly modern in every detail, with an abundance of structural strength, ruggedness and built-in ability to "take it"! The strong, husky, doors are "lubricated" for smooth positive action and protection against corrosion—the double-action, heavy duty, spring bumpers absorb those severe draft and buffing shocks. The smooth car interior permits coal to unload easily—the welded end sill members and other features which are provided make these cars a real buy!

Ask our Sales Representatives about the possibilities of "changing over" your mine to Q.C.F. Drop-Bottom Cars!

**a.c.f.**

**MINE CARS**

**AMERICAN CAR AND FOUNDRY COMPANY**

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# SOFT ROOFS made Safe

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SAVING  
EASILY and  
SPEEDILY  
INSTALLED

## Simplex ADJUSTABLE Roof Jacks

Permanent or  
temporary sup-  
port of roofs,  
cross timbers,  
steel beams and  
rails.



### MORE WORKING SPACE with Strength and Safety!

Trim and slim—no wasted girth—more space for loading machines and conveyors to work in—yet safer than wood posts many times their size. Both

M-8 and M-16 types have heat-treated screws,  $1\frac{1}{2}$ " and  $1\frac{7}{8}$ " diameters respectively, and 2" and  $2\frac{1}{2}$ " steel tubing respectively.

Capacity of light-duty M-8 Jack is eight tons. Heavy-duty M-16 Jacks, 16 tons capacity. Both tested for overload. Built with lever operating handle, as at right, or with combination slide and drop operating handle, and with corrugated bases and removable heads for any type of roof supporting member.

M-9 and M-17 Roof Jacks have screw base assembly only for use with standard pipe supplied by the user.

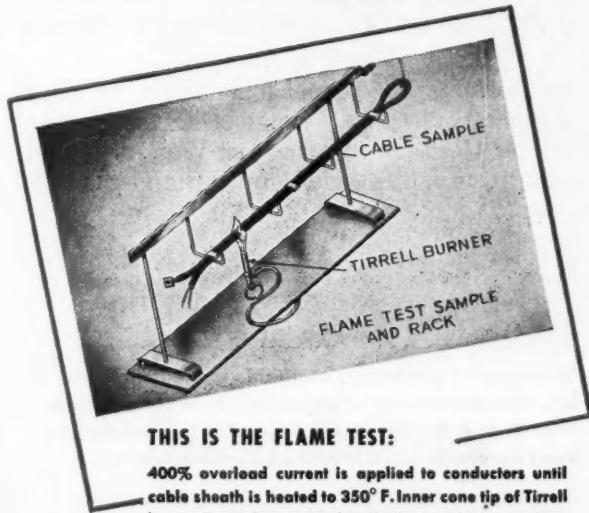
Simplex Jacks for every mining purpose . . . described in Catalog No. 45, yours for the asking. Write today.

M-8 with Lever Nut Operating Handle.  
Type "FS" Flat Swivel Head is drop-forged steel. (Used with wooden cap pieces.)



SERVING YOU THROUGH SCIENCE

**WHAT IT MEANS ON U. S. ROYAL SAFETY TESTED  
MINING MACHINE AND LOCOMOTIVE CABLES**



THIS IS THE FLAME TEST:

400% overload current is applied to conductors until cable sheath is heated to 350° F. Inner cone tip of Tirrell burner flame then applied for 1 minute to bottom surface of folded cable. Total length charred is measure of flame-resistance and shall not exceed 14 in. U. S. Royal Mining Cables pass test with extra margin of safety.

P-103 is an official number assigned to United States Rubber Company by the Department of Mines of the Commonwealth of Pennsylvania. It indicates that all U. S. Royal Mining Cables bearing this number conform to strict fire-prevention regulations established by the Department.

The name "U. S. Royal", on Mining Machine and Locomotive Cables indicates that they have not only passed a severe "Flame-Resistance" test, but also tests for moisture-absorption, bending, twisting, impact and stretch.

SPECIFY THE NEW U. S. ROYAL *Safety Tested* MINING MACHINE AND LOCOMOTIVE CABLES



**UNITED STATES RUBBER COMPANY**

1230 AVENUE OF THE AMERICAS • ROCKEFELLER CENTER • NEW YORK 20, N. Y.

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### FREE INFORMATION

To War Assets Administration:<sup>\*</sup>

Please send me full information, including availability and pricing of the following:

Carbon and Alloy Billets and Blooms —H. R. & C. R. Alloy Sheets —Strip and Plates —Stainless Steel Sheet and Strip —Mechanical Tubing, Carbon and Alloy —Standard Type Valves and Fittings

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FIRM.....

ADDRESS.....

CITY..... STATE.....

\*Send coupon to nearest Regional Office below for fast service.

STEEL can be bought now through War Assets Administration, for immediate shipment to you. Alloy steel billets, blooms and many items of alloy steel bars, particularly in the larger sizes, are available in Chicago, Cleveland, Detroit and other Regional Offices.

Lowscale prices make it worth your while to buy this high-grade material, even if you intend it for low-cost products.

Carbon and alloy steel mechanical tubing is also available in a wide range of sizes and specifications. Contact your nearest War Assets Administration Office below, or clip and mail the coupon.

All steel is subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

### EXPORTERS

Most surplus property is available to the export market. Merchandise in short supply is withheld from export, and if such items appear in this advertisement they will be so identified by an asterisk.

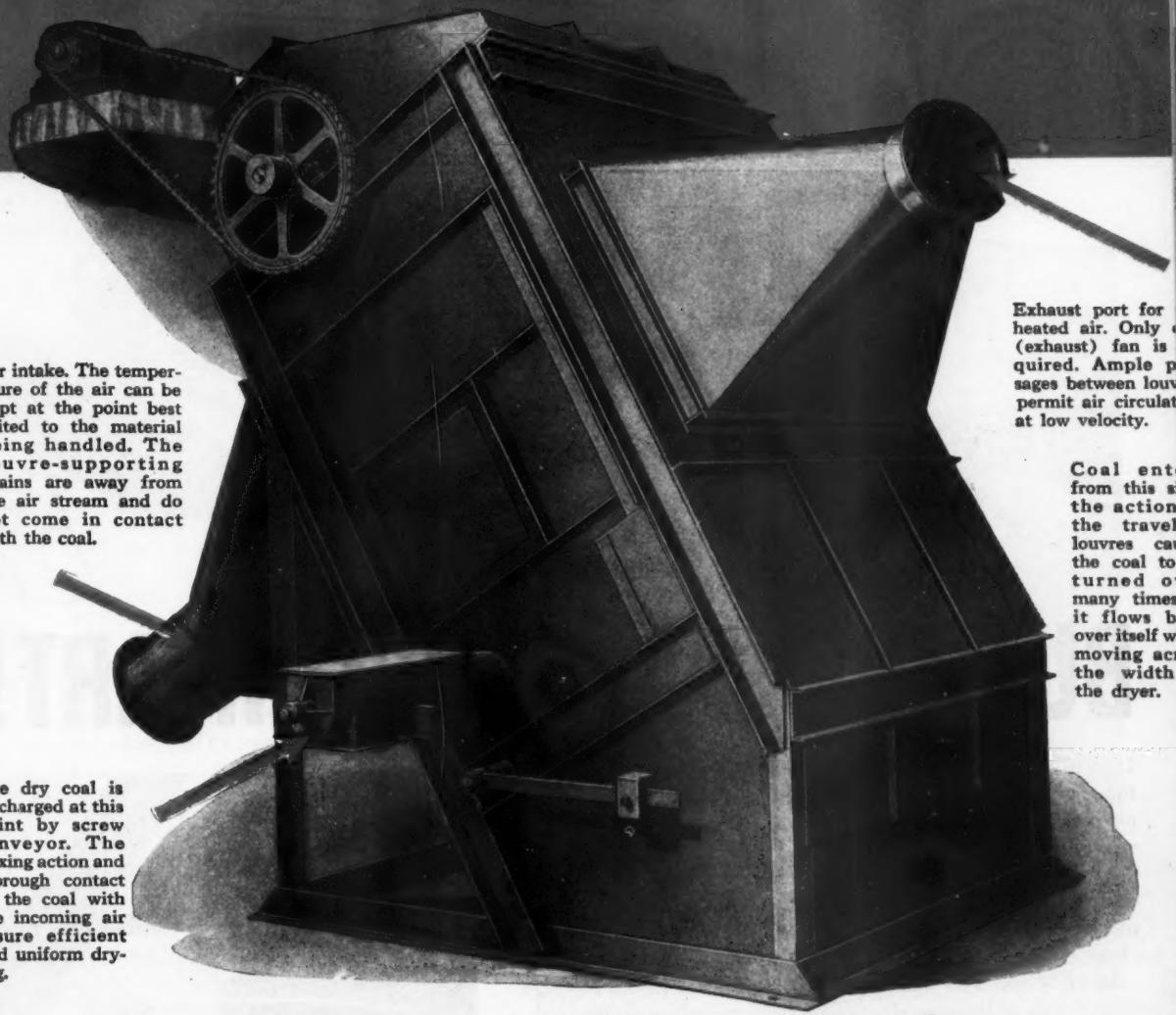
# WAR ASSETS ADMINISTRATION

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# LINK-BELT Multi-Louvre DRYER FOR COAL



Air intake. The temperature of the air can be kept at the point best suited to the material being handled. The louvre-supporting chains are away from the air stream and do not come in contact with the coal.

The dry coal is discharged at this point by screw conveyor. The mixing action and thorough contact of the coal with the incoming air insure efficient and uniform drying.

Exhaust port for heated air. Only one (exhaust) fan is required. Ample passages between louvers permit air circulation at low velocity.

Coal enters from this side. In the action of the travel the travel louvres carry the coal to be turned over many times as it flows back over itself while moving across the width of the dryer.

## Faster Drying...Less Cost...Less Space

The problem of drying fine sizes of coal after wet cleaning is economically and efficiently solved by the new Link-Belt MULTI-LOUVRE unit, which permits faster drying without overheating, requires considerably less horsepower, needs less space, has simpler and less expensive fans, and lower installed cost. MULTI-LOUVRE drying is also justified where fines are air-cleaned at mines with prevalent moisture, by increasing the efficiency of air cleaning.

The MULTI-LOUVRE DRYER retains coal only a fraction of the time that is required by kiln type dryers. With this principle, rapid convection drying is obtained, which guards against damage to the coal that might be caused by overheating, such as oxidation or loss of volatile matter. Fully proved in service. Ask for Folder No. 2009.

LINK-BELT COMPANY  
Chicago 9, Philadelphia 40, Pittsburgh 19, Wilkes-Barre, Huntington, W. Va.,  
Denver 2, Kansas City 6, Mo., Cleveland 13, Indianapolis 6, Detroit 4,  
St. Louis 1, Seattle 4, Toronto 8.  
10,381

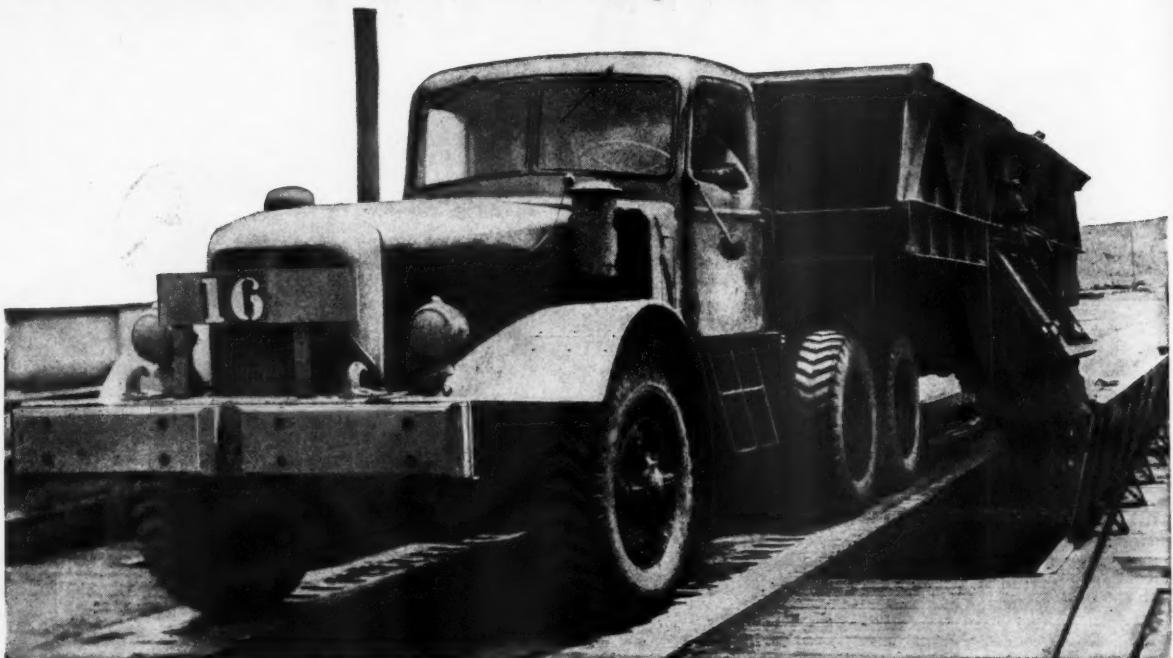
## COAL PREPARATION AND HANDLING EQUIPMENT

Engineered,  
Built and Backed by



**LINK-BELT**

# A FACE-LIFTING, YES...



# BUT THE SAME STOUT HEART!

In 1936 the **Southwestern Illinois Coal Corporation, Percy, Illinois**, bought ten Model FC Macks, straight trucks carrying 16-ton loads. In 1940, when greater load capacity was desired, Southwestern gave them a face-lifting.

Regular truck bodies were removed, frames shortened, fifth wheel mounted, Diesel engines installed. Using these re-built trucks as tractors, they attached 30-ton semi-trailers and just about doubled their haulage.

More Macks were added in 1944 . . . seven powerful tractors. Today, four of those original converted trucks are rolling in the modern fleet, with *not the slightest decrease* in tonnage.

Operators of Mack trucks can count on dependable performance and longer truck life. If you're looking for efficient and profitable fleet operation, call in your Mack man.

If you attend the 1946 Metal Mining Convention and Exposition in Denver, Colo., Sept. 9-12, be sure to see the Mack Exhibit.



Mack Trucks, Inc., Empire State Building, New York 1, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, New York. Factory branches and dealers in all principal cities for service and parts.

**Mack**  
TRUCKS  
FOR EVERY PURPOSE



**Performance  
Counts!**

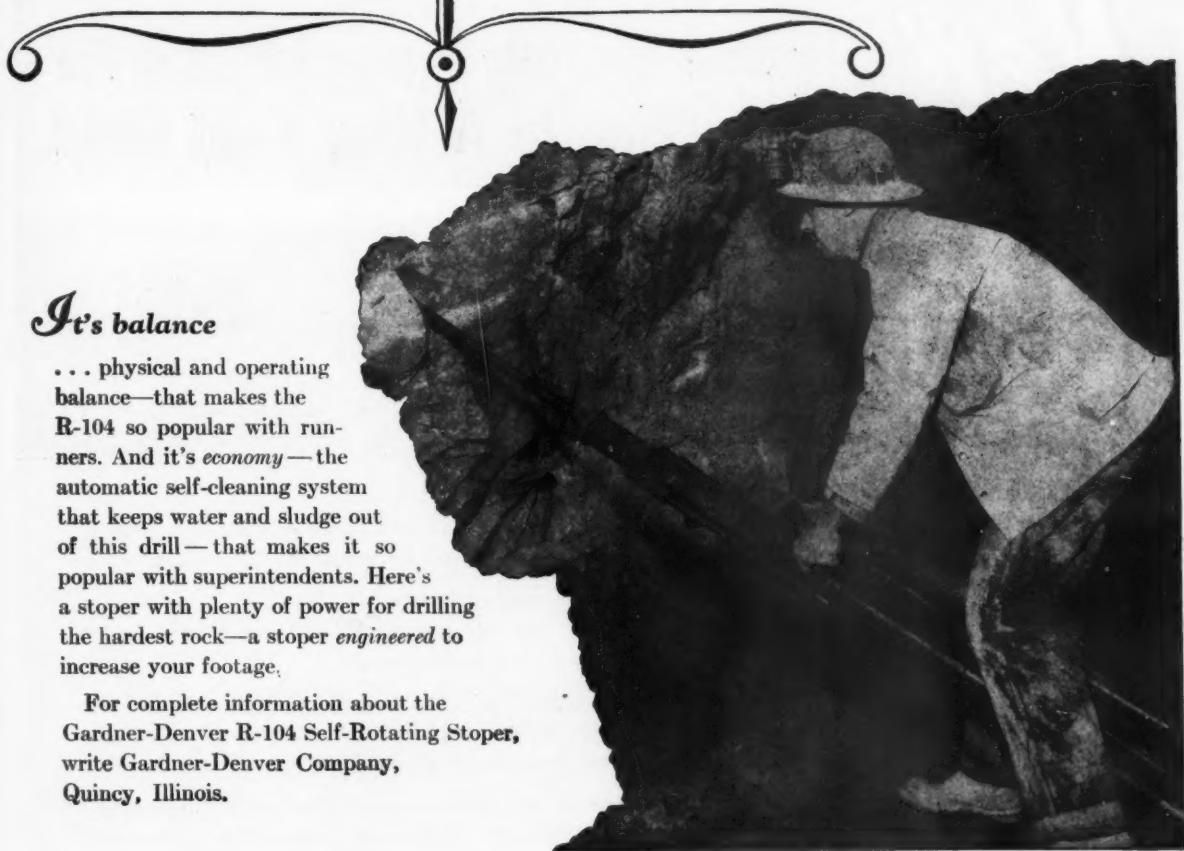
# Two kinds of balance increase your footage with the R-104 Stoper

## **PHYSICAL BALANCE**

Set up the R-104 Stopper for an angle hole. Note that the stinger never "feels light"—that the nose always stays *up*. In this stoper, the center of gravity is far enough below the holding handle to provide this proper physical balance—an assurance of easy handling and greater safety.

## **OPERATING BALANCE**

In the R-104 Stopper, the feed pressure is balanced with the power of the drill itself. As a result, there is no pull on the holding handle—between each blow of the hammer, the drill eases away from the rock just enough so that the rotation can turn the bit without any noticeable drag.



## ***It's balance***

... physical and operating balance—that makes the R-104 so popular with runners. And it's *economy*—the automatic self-cleaning system that keeps water and sludge out of this drill—that makes it so popular with superintendents. Here's a stoper with plenty of power for drilling the hardest rock—a stoper *engineered to increase your footage*.

For complete information about the Gardner-Denver R-104 Self-Rotating Stopper, write Gardner-Denver Company, Quincy, Illinois.

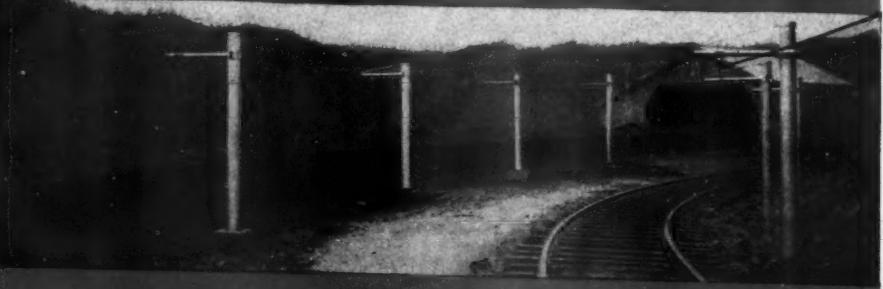


# **GARDNER-DENVER**

*Since 1859*

# New

## Timken Bearing Equipped Cars For A New Mine In A New Coal Field



The development of the new Feds Creek Coal Co., Inc., mine in Pike County, Kentucky, opens up a new and important coal producing area. Operation of the mine was started on October 15, 1945 and at the present time production is approximately 1400 tons of coal per day. A much larger daily tonnage is anticipated as the mine develops.

Mine car equipment now consists of 150 Enterprise stub axle cars of the rotary dump type, 4 ton capacity, mounted on Timken Tapered Roller Bearings. More cars of course will be needed as production climbs towards its peak.

The importance of this new coal area is further emphasized by the fact that the Norfolk & Western Railroad has constructed several miles of new track to serve the new mine, which is expected eventually to become one of the largest coal mines in Kentucky.

Don't take any chances with the bearings for your new mine cars; look for the trade-mark "TIMKEN" stamped on every bearing you use.

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO



# Support the roof at your working faces with Alcoa Aluminum Beams



STRONG · LIGHT IN WEIGHT · LONG-LIVED

Your miners will like working with Alcoa Aluminum structural shapes. The light weight of these beams makes hauling and handling easy. They can be set in place fast. Their high strength helps assure safe working conditions.

Alcoa Aluminum is highly resistant to the acid corrosion encountered in coal mines. This means that, on the job or in storage, these beams are long-lived.

Why not put some of these Alcoa Aluminum structural shapes to work, and then watch your miners' reactions? Our engineers will help you select shapes that meet your strength requirements. Call the nearby Alcoa office. Or write ALUMINUM COMPANY OF AMERICA, 1764 Gulf Building, Pittsburgh 19, Pennsylvania.



# ALCOA ALUMINUM

IN EVERY COMMERCIAL FORM





# OWNERS OPERATORS

**IMMEDIATE  
DELIVERY  
ARC WELDERS...  
RELATED EQUIPMENT**

New and used arc welders of well known makes, including Hobart, Lincoln and Westinghouse, in 200, 300 and 400 ampere ratings, either AC or DC, are now included in government-owned surplus and are available for immediate purchase and delivery.

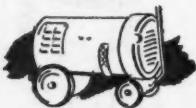
Here you will find the equipment to modernize your shop—to replace worn-out or obsolete welders—to expand your business.



**Lincoln**—In all models and most ratings. Hundreds in the popular 300-400 Ampere size.



**Hobart**—Standard models of this make available in large quantities and most ratings.



**Westinghouse**—Portable models available in limited quantities.

**EXPORTERS** Most surplus property is available to the export market. Merchandise in short supply is withheld from export, and if such items appear in this advertisement they will be so identified by an asterisk.

All arc welders are subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area, and then to purchase the material offered herein.

Prices are low, based on the type and condition of the equipment. The inventory is located at various points throughout the country. It is broad and includes the machines you need. To obtain complete information on the availability, location and condition of the equipment you want fill out the coupon and send it to your nearest War Assets Administration Regional Office.

*For full information clip and mail this coupon to:*

**War Assets Administration:**

Please send me complete information on the availability, condition and location of the following types of equipment.

...Hobart Arc Welders	...Westinghouse Arc Welders
...Lincoln Arc Welders	...Electrodes and Welding Rods

Arc Welding Equipment:	AC ... DC ...
------------------------	---------------

Electric Motor Driven:	Volts ... Phase ... Cycles ...
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Transformer Type:	Volts ... Phase ... Cycles ...
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Name .....

Firm .....

Address .....

City ....., State .....

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*Two More Major*  
**MARION** *Developments*  
 FOR THE MINING INDUSTRY!

## MARION III-M

A truly modern, fast, and powerful 3-1/2—4 yd. Diesel Shovel that insures top yardage and low production costs under all digging conditions. Features include: anti-friction bearings for all high speed shafts—air control of all operations—ships without major dismantling—readily convertible to dragline or clamshell.



## MARION 151-M

Built especially for high production in rock and ore where its fine balance of speed, power, and weight are proving daily that it is truly the "machine of tomorrow for today's jobs." Outside dipper handles—single hitch—Amplidyne or Rototrol control—Herringbone gear drive—plus many more features insure top production and long life.



What is Your Material Handling Problem?



**MARION**  
 POWER SHOVEL COMPANY  
 MARION, OHIO, U. S. A.

Offices and Warehouses in all Principal Cities • Established 1884

## For Today's O-B Trolley Shoes

### ... Put these Mine-Tested Engineering extras of O-B type-L shoes to work on your locomotives

Long 3-inch contact between shoe and wire affords ample current capacity, prevents harmful arcing and wire burning.



Internal spring keeps shoe and harp assembly in proper alignment.

Smooth long wearing shoe hugs the wire tightly, glides smoothly over bumps and hard spots. Dewirements are infrequent.

Trolley shoe rides wire on "dead-center", can't tilt when going either forward or backward. Patented bearing keeps pivotal center of shoe located in center-line of wearing surface.

Designed for long life with low wire wear, Type L Trolley shoes bring current collection costs down to rock bottom.

Heavy braided copper shunt brings current direct from trolley to motor cable. No resistance, and hence no harmful heating.

MANSFIELD, OHIO  
Canadian Ohio Brass Co., Ltd., Niagara Falls, Ont.

# Mining

CONGRESS JOURNAL

Published for the Entire Mining Industry  
by The American Mining Congress

JULIAN W. FEISS, Editor

Volume 32

SEPTEMBER, 1946

Number 9

## GOVERNMENT CONTROL AND THE COAL INDUSTRY

**A**S we go to press there is no indication that the Government plans to return the bituminous coal mines to the owners and operators in the near future. To all intents and purposes our coal mines are nationally-controlled today and although this condition may be only temporary, the ultimate outcome of this expedient may have serious consequences.

The agreement entered upon between the Government and the United Mine Workers has placed a terrific burden of higher costs upon the coal industry. The OPA calculated the total at \$280,500,000 for the 1946-47 coal year. Of this, \$57,750,000 is to be assumed by the operators and \$222,750,000 passed to the consumer. This in turn has been reflected by the increased price of bituminous coal, averaging 40½¢ a ton as granted by OPA. Such a situation has placed coal at a serious disadvantage in competition with other fuels.

Already there are examples throughout the country of cities changing to natural gas; coal is becoming too unreliable and too expensive. Cities as far apart as Washington and Colorado Springs have been considering this step and in certain Washington suburbs the conversion by public utility companies to natural gas is imminent. The increased use of oil for domestic heating requires no comment and the railroads are planning additional diesel locomotives.

Any shrinkage in the consumption of bituminous coal, due to inroads of other fuels or the lessening of industrial activity, will materially increase the hardships of the coal industry. With increased competition profit margins, never large, will tend to be reduced or wiped out, and the situation for higher-cost producers may become precarious. This is the result of large pay increases and other benefits granted to workers on the basis of political power rather than productivity. Beyond all this, also, the fundamental rights of management are seriously threatened by the Government-sponsored contract terms extending the special privileges of the Wagner

Act to organizations of supervisory employees affiliated with rank-and-file unions.

If there be any thought that the ultimate answer to coal production lies in nationalization, now is the time for the public to examine the one outstanding example of such control. Today we have before us the case of Britain. Elsewhere in this issue the British Library of Information and the *Colliery Guardian* have presented us with the facts.

Although the British experiment has not been functioning for an extended period, the Labor Government has been in the saddle a sufficient time to have shown positive results. England today should be well on the road towards post-war recovery, but instead she is facing the most serious crisis of her industrial history. To date governmental control of coal mines in England has been an outright failure.

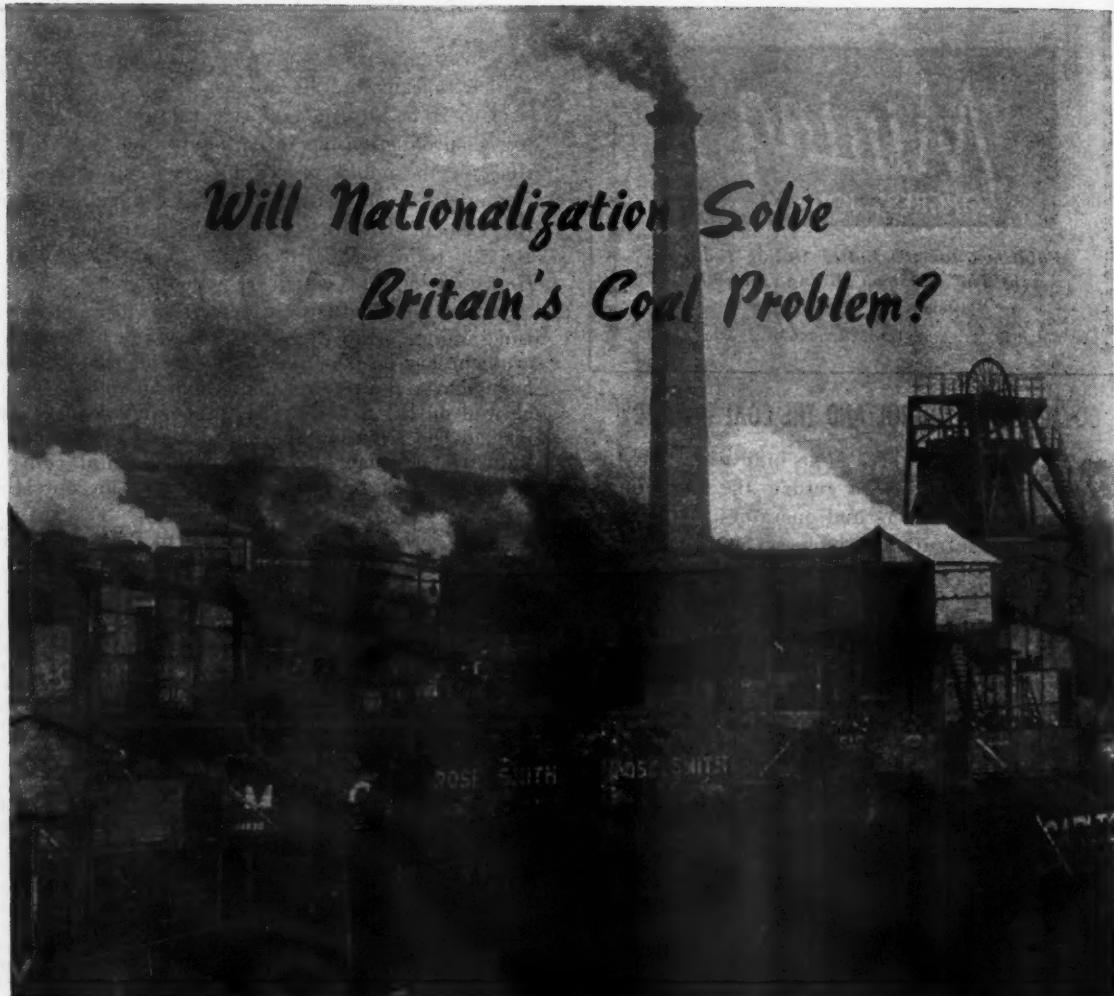
The *Manchester Guardian* is one of Britain's great newspapers. In the weekly edition dated July 26 an editorial opens with the following paragraph:

"The collapse of British coal production is a calamity not only to this country but to Europe. It has deprived us of our historic contribution to the international economy. It has robbed our foreign policy of one of its greatest assets. Had Mr. Bevin been able to help France with British coal half the troubles about German reparations would have been avoided. German industry would not be at a standstill because German coal had to be exported. We could have aided Scandinavia; we could have sweetened tempers in Italy; our relations with Argentina would be better. The absence of British coal exports is a grave handicap to world recovery. Yet not only are we unable to export but we have not enough coal to keep our own industries fully running or, if we can just about do that, we have no certainty that we shall be able to do so all through the winter. We have even to encourage coal users to turn over to oil-burning. Our stocks have gone down to a desperately low level and the Ministry's coal balance-sheet shows no margin of safety."

Elsewhere in the same editorial it is indicated that nationalization has offered no solution to the serious manpower shortage at the mines. This situation has become so acute that it has been proposed in Parliament to open immigration to Polish coal miners. In the face of past unemployment and the horrors of the dole after the last war, Britain must be sorely pressed to consider such measures.

England does not admit defeat easily. As all of us know from recent history, this quality is an outstanding characteristic of the British people. When reliable English publications report the almost complete paralysis of the coal industry, we may rest assured that the situation is extremely serious.

With the example of the British experiment before us we wish to register the strongest possible opposition to governmental control of coal mines. Aside from the fact that this step would be contrary to the fundamental concepts of America, such control hinders rather than helps coal production. In Britain the treatment appears to be more drastic than the cure and there is no value to any cure when the patient dies as the result.



## *Will Nationalization Solve Britain's Coal Problem?*

THE position of coal in the British economy has changed very greatly in the last 30 years, but it is still the backbone of British industry and indispensable in Britain's recovery and immediate progress. The drastic measures that are being taken to reorganize the industry reflect both the troubled history of coal since the 1914-1918 war and the determination of the Government to give it top efficiency and productivity.

Good coal, in ample quantity and available at very low cost, was a key factor in Britain's industrial leadership in the 19th century. When the 1914-18 war broke out the position of the industry was becoming less stable, but it still employed 1,127,000 persons, and produced 287 million tons a year, of which it exported 98 million tons. Following that war, however, the position deteriorated both on the supply and demand side. On the supply side, costs rose as a re-

**This Account Presented By British Information Services Shows the Drastic Measures That Have Been Adopted to Combat Declining Production at the Collieries**

sult of the exhaustion of the more easily accessible seams and of increased wages which were not matched by corresponding increases in production per man. On the demand side there was a rapid fall in domestic demand (partly because of the uncertainties of the depression but also because of economies effected in private and industrial use) and an even more serious fall in foreign demand (including ships' bunkers). Production fell to 208 million tons in 1933, and rose to only 226 million by 1938, with 782,000 employed. During the recent war, it proved impossible to reverse the falling trend in pro-

duction, and the present problem is an acute coal shortage for domestic needs—not to mention exports—reflected by an inadequate labor force and an unsatisfactory production per man.

This does not mean that all—or even most—of the coal mines have deteriorated in productive power, that all production is inefficient and that opportunities do not exist for greatly extended use of coal, both for inland consumption and exports. Many of the British mines have great resources available; in some companies production has been efficient by the highest standards; and research into

**Average Weekly Production in Tons Per Man in Britain**

	Output in tons		
	Average per manshift weekly	At the Over-production face	all
1935...	4,262,000	3.02	1.17
1938...	4,353,000	3.00	1.14
1941...	3,957,000	2.99	1.07
1945...	3,500,000	2.70	1.00
Jan. 1946...	3,410,000	2.73	1.00
Feb. 1946...	3,607,000	2.76	1.03
Mar. 1946...	3,722,000	2.79	1.04
Apr. 1946...	3,440,000	2.73	1.01

the best use of coal and its by-products has reached a very advanced stage. The problem in Britain has been to bring the industry as a whole up to the highest standards within the industry; and the difficulty of finding a solution to this problem has been accentuated by the economic crises of the world during the inter-war years and during the present period of reconstruction.

**Increased Government Control During the War**

During the war, the Government gradually took more and more control over the industry. A Coal Production Council (a labor-management body) was active in the first years, supported locally by District Coal Production Committees and Pit Production Committees. But this proved inadequate, and in June, 1942, a Ministry of Fuel and Power was created with power to take operational control of the mines. The Production Council was replaced by national and regional coal boards, with very wide terms of reference. In each region, a controller, appointed by the Ministry, had power to give such directions as would "ensure the most efficient operation of the industry . . . including directions as to the concentrations and grouping of pits." The actual running of the mines was left to the owners, though their managers were "subject to removal at the instance of the controller."

This system of "dual control" remained in force for the remainder of the war, the only modification being that in 1944 the regions were subdivided into groups of pits, each group being put under a Government-paid Production Director, chosen on technical grounds to increase output.

The Government's wartime control necessarily had far-reaching effects on coal manpower, mechanization and wages. The drift of men from the mines was met partly by "freezing" miners to their work under an essential work order, by bringing back miners from the Forces, by giving draftees an opportunity to opt for work in the mines, and finally by

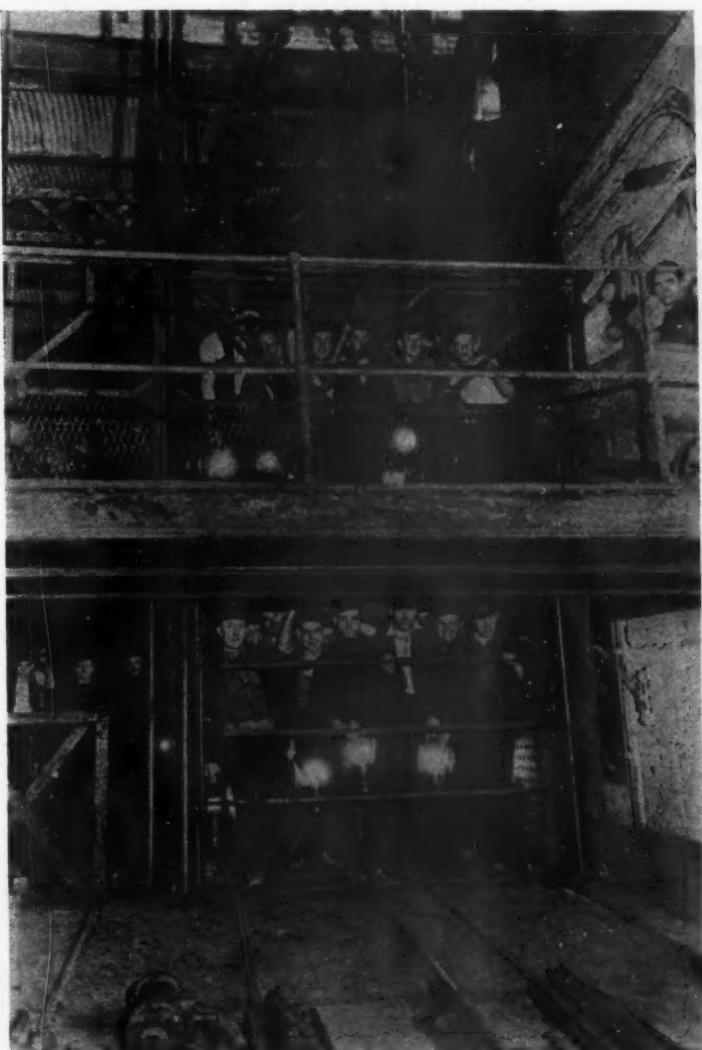
choosing a proportion of draftees under a ballot scheme and sending them into the mines compulsorily.

The problem was not only to increase manpower but to increase production per man. The high average in the industry, the legacy of unrest and persistent absenteeism among some were difficult obstacles. Still greater obstacles were presented by the great divergencies in the productivity of existing mines and by the difficulties of extending mechanization. At an early stage in the war, the Government expressed the hope that mechanization would greatly help to solve Britain's coal problem and considerable progress was made with coal cutters and conveyors.\*

\* Already in 1938, 59 per cent of coal output was cut by machinery and 54 per cent conveyed by machinery. By 1943 the percentage cut had risen to 69 and that conveyed to 66.

However, the introduction of power-loading—a specialty of American mines—did not prove quickly adaptable to British mines, and the difficulties of improving the haulage of coal and the transport of men underground proved very great. Individual owners (and often miners) did not readily accept new methods, and the Ministry of Fuel and Power exerted all its efforts, through training and the supply of new equipment, to carry the industry forward.

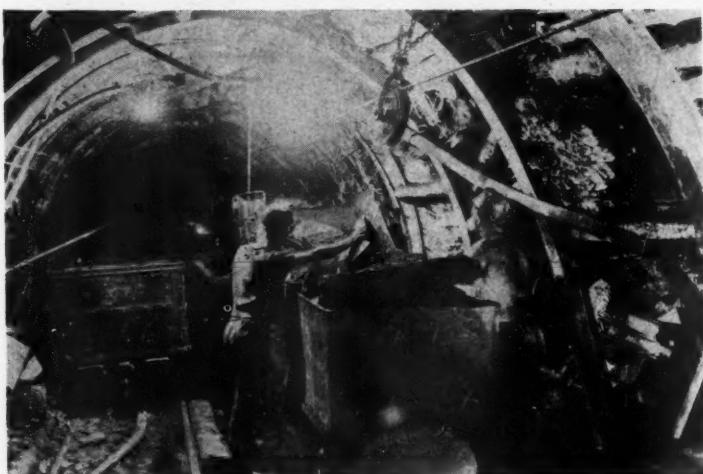
The miners' wage question proved by far the most serious industrial relations problem of the war. Wage-increases in the first war years did not bring miners up to the level of other essential industries, and in 1942 a Government-appointed board put forward entirely new proposals which were accepted; an unconditional flat-rate increase per shift, a bonus on



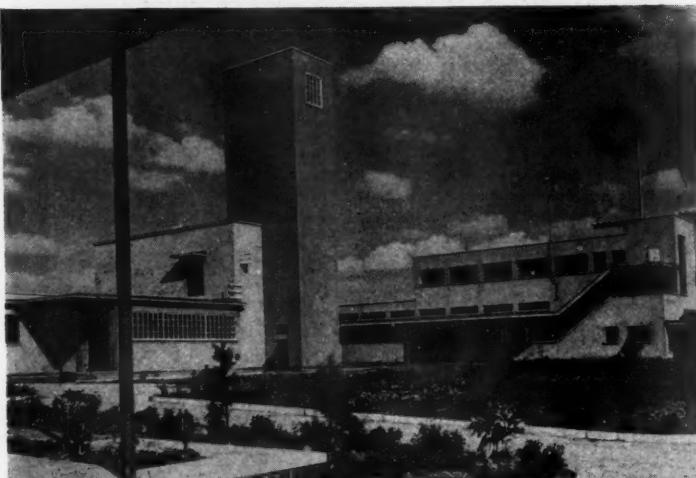
With lamps in their hands, British miners go below in the cage



Low coal is found in Britain also



Coal comes off the conveyor into trucks in this British mine



Change rooms, showers, and recreation facilities are provided in modern buildings at this Lancashire colliery

output, and a guaranteed national minimum of £4/3/0 a week. It recommended that the principle of the national minimum (something the miners had demanded for 20 years) be maintained in peacetime. The board also put forward (in 1943) a plan for new wage-machinery, consisting of a national negotiating committee (representing both sides) and a permanent national reference tribunal to which all unsettled questions could be referred. In 1944, following prolonged unrest, the tribunal increased the national minimum (for underground workers) to £5 a week.

In order to be able to apply these wage-increases nationally on a uniform scale, it was necessary for the Government to establish a "coal charges account" which took over the existing wartime levies on sales (by which the industry adjusted profits) and greatly extended them to meet the new inequalities in proceeds between different districts. Profits per ton sold were standardized. By April, 1944, the levy had been increased to 12s. per ton of coal sold, the net result being that "probably half the pits were kept in existence by the other half. . . Economic laws had ceased to apply in the industry."

### Preparations Made to Reorganize Mining

As the end of the war approached, there was no disagreement in Britain on the postwar need for a complete reorganization of the coal industry. During the war it had been necessary to get the coal at whatever cost. In peacetime, it would be vital so to plan the industry that the cost would be economic, which would demand a freedom to close some collieries and develop others, intensify research, and spend very large sums on new equipment and developments. As a basis for planning, an elaborate statistical analysis of the entire industry was published by the Ministry of Fuel and Power in July, 1944. This was followed in March, 1945, by a momentous 150-page report prepared by the Reid committee, a group of seven eminent mining engineers who had been given the task, by the Ministry, of surveying the industry in a completely objective manner and making basic recommendations for its future efficiency. This report compared British and foreign practice and results in detail, made sweeping technical recommendations, and concluded:

"It is evident to us, as mining engineers, that they (i.e. the changes) cannot be satisfactorily carried through if the industry organized as it is today. . . An authority must be established which would have the duty of ensuring that the industry is merged into units of such sizes as

would provide the maximum advantages of planned production."

It is against this background that nationalization must be viewed. The owners' association accepting the need for reorganization, suggested that they should themselves establish a central board whose technical and financial decisions would be accepted as binding by the entire industry. The miners, however, and a large section of the public, argued that the owners could never, of their own volition, bring in the drastic changes needed and that public ownership and control were essential if the Reid committee's recommendations were to be carried out.

### Nationalization Bill Summarized

It is not surprising, therefore, that the nationalization of the coal industry was given a high priority in the Labor Government's program. The bill was introduced in December, 1945, and passed its third reading in the House of Commons on May 20, 1946. The main features of the bill may be summarized as follows:

1. All the assets of the coal industry, including a very wide range of ancillary interests (e.g. colliery coke-ovens, electricity plants, transportation works) will be taken over compulsorily by the State, with certain borderline cases being left for option or arbitration.

2. A nine-man national coal board, appointed by the Minister of Fuel and Power, will conduct the whole industry. They will be responsible, ultimately, to the Minister and Parliament, and will receive general policy directions from the Minister; but apart from this, the board will develop the industry with complete freedom from outside interference.

3. Two coal consumers' councils—one industrial and the other domestic—will be established to advise the Minister on matters that fall within their sphere.

4. The present owners of the coal industry will be compensated by the issue of Government stock, the amount to be determined for the main industry by an arbitration tribunal, and allocated first to districts and then to individual concerns within each district by a central valuation board and district valuation boards respectively. In determining compensation, an attempt will be made to ascertain the amount which would have been realized if the assets in question had been sold "in the open market by a willing seller to a willing buyer," without nationalization in prospect. In order to "cushion" the effect on the stock market, the stock handed over will be inalienable in the first instance, though it will be redeemable freely when coal com-

panies liquidate or when cash is sought by a company to develop other remaining parts of its business.

5. For the capital needs of reorganization, a maximum sum of £150 m. (\$600 m.) will be advanced to the board by the treasury for use within the first five years; and, in addition, up to £10 m. (\$40 m.) may be borrowed by the board temporarily. Subsequent financing will be determined later by Parliament.

6. The Board will make such payments to the Minister as he may request to recoup the Government for its compensation and capital expenditure. Any default in these payments must be reported to Parliament. The board is liable to central and local taxation.

7. The Miners' Welfare Commission (whose fund comes from a levy of 1d. per ton on coal sales) will be reconstituted with 10 members appointed by the Minister; but it will no longer expend money on research into the health and safety of miners, since this will be the responsibility of the Minister, with funds provided directly by Parliament.

The chairman, vice chairman and the seven other members of the national coal board, on whose efficiency and initiative the success of the whole program depend, were

designated by the Minister in March. The chairman is Lord Hyndley (62), who has been managing director of the Powell-Duffryn Companies (one of the largest coal concerns), a member of the court of the Bank of England, chairman of the Finance Corporation for Industry, Controller-General of the Ministry of Fuel and Power, and for many years a leading personality in British industry. The other members are also national figures, renowned in the field of mine-engineering, science, finance, administration or labor. The chairman is to receive a salary of £8,500 a year and the members £5,000 a year; and they are not normally to hold any other positions.

The field is now set, therefore, for a massive reorganization of Britain's coal, the object being to increase productivity, attract a high calibre of recruits, and put the industry on a permanent prosperous basis. It is a task which will inevitably take years to complete, and constant research must allow for full consideration of the changes in industrial technique that will come about during this period. Despite all changes, however, it remains unquestionable that for an unforeseeable period ahead a flourishing coal industry will be crucial to the British economy.



### Extract from Editorial in "Colliery Guardian," August 2, 1946

THE debate on the coal situation in the House of Commons on July 24 was shot with a sense of imminent catastrophe which was amply justified by the somewhat confused facts which the Minister of Fuel and Power disclosed.

In the coal year from May 1, 1945, the total available supply of coal from all sources amounted to 181 million tons, and the total deliveries for home consumption and export to 186.8, leaving a deficit of over 5 million tons, which was met in part by a reduction of about 3½ million tons in stocks. This year the production is estimated at 186 million tons, as a result of a larger output from opencast workings, but inland consumption is reckoned at 188 million tons, giving with an allocation for export of 8.2 million tons (or 600,000 tons less than the total for 1945-46), a total consumption of 196 million tons and a deficit of 10 million tons. To meet that deficit, which is the absolute minimum to be set in face of a substantial increase in industrial activity and in the consumption of gas and electricity, it is proposed to press for conversion to oil on railways and in factories, with a removal of the duty, which may save some 3 million tons of coal, and for an increased output of opencast coal to

the extent of 1½ million tons, together with further economies in the use of fuel which might realize a further saving of 1½ million tons—although any worsening of the quality of the coal supplied may invite failure, and nothing is said about the price.

That would still leave a deficit of 5 million tons, involving a further draft upon stocks, and leave the latter at a perilously low level, threatening to inflict grave and varied hardships upon the householder. Mr. Shinwell (the Minister of Fuel and Power) endeavored to lighten the blow by hints of improvements in methods of distribution which might raise effective stocks by 1½ million tons, but the House refused to be convinced that the basal problem could be solved in practice by this kind of jugglery. At the most it would mean carrying forward a debit of 1½ million tons to the next account. The dominant fact is that instead of a stock pile of 16 million tons, regarded conservatively as the minimum for safety, we look like entering next winter with no more than 11 million tons in hand, compared with 13 million tons last year. And with all expedients exhausted, a slight increase in consumption might bring the whole edifice to the brink of disaster.

# Open Pit Mining For Manganese



The Dominion Pit is located entirely in clay

**The Operations of Dominion Manganese Corporation, Crimora, Va., Illustrate Old Deposits Can Be Worked Efficiently By Modern Methods of Mechanization Under the Stimulus of Warlike Demands**

D. E. EILERTSEN  
*Mining Engineer*  
and  
J. W. FEISS  
*Mining Congress Journal*



All manganese analyses were run in this small laboratory adjacent to the offices

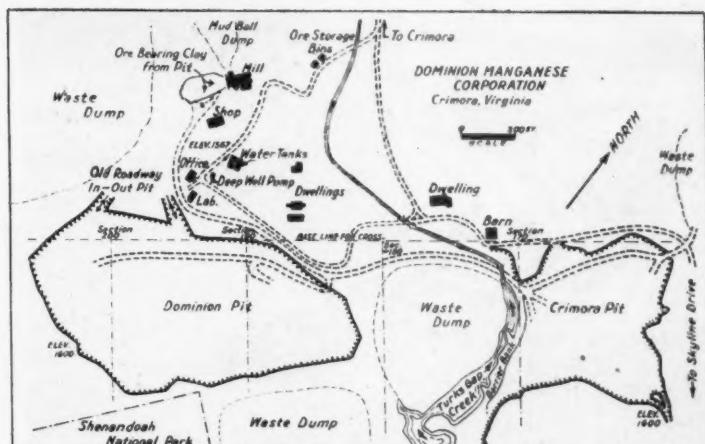
**F**EW mining men know about the manganese deposits of Virginia, in fact it is safe to assume that their existence will be news to many who read this article. Domestic production of this critical mineral has not been extensive of recent years and it took the stimulus of war to focus attention on the old Virginia deposits, some of which have been producing intermittently since 1867. In normal times domestic manganese has had difficulty in competing with ores from Russia, Brazil, India, Cuba, West and South Africa. With higher grade deposits and a cheap labor supply, foreign producers have dominated the American market; consequently few realize that we do have manganese.

ese in the eastern states and that it has contributed materially to our steel production in the past and throughout the period of two wars.

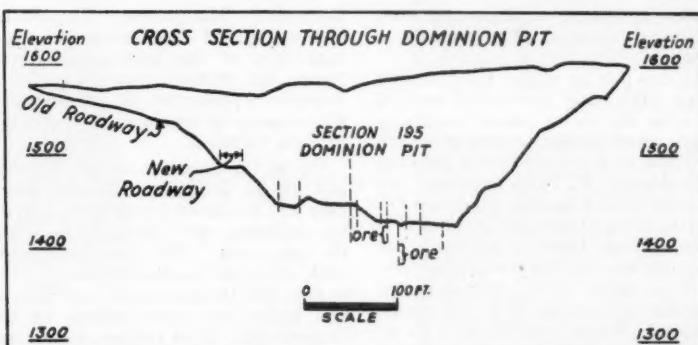
### Virginia an Important Manganese State

From the year 1838 to 1918, the end of World War I, the United States produced 576,354 long tons of manganese ore. Of this total the State of Virginia produced 270,348 and the Crimora and Old Dominion Mines accounted for 159,685 long tons. Although surpassed in production by newer manganese operations in the Western states, the Crimora deposits up to 1918 yielded more ore than any other in the country. From 1918 to 1944 the total manganese production of the United States was 2,622,364 short tons with Virginia producing 399,296. Only the state of Montana surpassed Virginia in production during the period between the two World Wars. In 1944 the Dominion Manganese Corporation became the largest single producer of manganese concentrates in the United States (page 584, Minerals Yearbook, 1944, U. S. Bureau of Mines) and the Crimora operations shipped 12,934 short tons of psilomelane ore averaging 41.9 per cent Mn, 3.8 per cent Fe, 10.8 per cent SiO<sub>2</sub>, 0.159 per cent P and 4.17 per cent moisture. This tonnage represented 64 per cent of Virginia's production during this critical war year when the state produced 20,172 short tons of the nation's total of 247,616.

Most manganese production in Virginia has come from the western side of the Blue Ridge Mountains where numerous small deposits form a considerable reserve of low-grade ore. Starting at Front Royal, north on the



Pit and mill layout at Crimora



Shenandoah, there have been about a dozen productive mines scattered southward down the valley with the most numerous concentrated in the vicinity of Waynesboro, the nearest town of any size to the Crimora deposit. There are other tracts of undeveloped manganese-bearing clays in this locality and those interested in the history and geology of the region are referred to: Virginia Geological Survey Bulletin No. XVII, "Manganese Deposits of the West Foot of the Blue Ridge, Virginia," by G. W. Stose, H. D. Miser, F. J. Katz, and D. F. Hewett; published by the University of Virginia at Charlottesville in 1919. This paper was prepared jointly with the U. S. Geological Survey and although by no means new, is a splendid reference on the entire region.

### Crimora Ore Found Disseminated in Clay

The geology of the Crimora area is not complex as regards structural features. The main range of the Blue Ridge, which runs immediately back of the Crimora deposit, is composed of the oldest rocks of the region, largely granites and greenstones of

pre-Cambrian age. The Erwin quartzite, a dense lower Cambrian formation, dips to the northwest at an average of 25 degrees and is the only rock outcropping adjacent to the Crimora deposits which occur within a small synclinal fold. In the Appalachian Valley the Erwin quartzite is overlain by the Shady dolomite, also of lower Cambrian age, and it is thought that the Crimora deposits have resulted from residual concentration of manganese in the weathered clays left from the Shady dolomite in the small synclinal area of the quartzite. The manganese ore occurs in nodules and veinlets disseminated in a compact clay. At Crimora overburden varies from 3 to 25 ft. in depth, the deepest portions being towards the valley to the southwest. The deposit itself is located at the very foot of the Blue Ridge escarpment.

The Crimora operation comprises two pits, the Dominion and the Crimora. The Dominion pit was started in 1943 and today is the larger of the two. At one stage in Crimora's mining history underground methods were used and due to the nature of the ground every foot had to be timbered. In the Dominion pit these



Mill under construction—Trommels and log washers in place



Excavation is started at the Dominion Pit

timbers are being exposed and they constitute somewhat of a problem to operation.

The two pits lie within the synclinal trough previously mentioned and in this area the ore is found largely in a basin which is about a mile in length and 1,200 to 1,400 ft. across striking N. 51 degrees E. The Dominion pit has been mined in one place to 175 ft. without striking quartzite and it is estimated that there is at least 200 ft. of ore-bearing clay overlying the quartzitic beds. The orebodies are lenticular in shape and ordinarily horizontal. Their outline tends to be irregular and thickness varies from  $\frac{1}{2}$  ft. to 25 ft. Sometimes there is a repetition of beds and in a few localities evidence exists of post-mineral movement and fracturing in the orebodies; talc and slickenslide faces are not unusual. Sand lenses are encountered frequently and this may be seepage from overburden which is composed largely of sand and gravel mixed with clay and small boulders. However there are no boulders to speak of in the ore-bearing clay.

The most important ore is psilomelan ( $H_4MnO_5$ ) and is readily identified by its characteristic botryoidal form. It is often referred to as "kidney ore." Manganite ( $Mn_2O_3H_2O$ ) and it is associated with pyrolusite ( $MnO_2$ ), although the quantity of the latter is not as great. Accessory minerals are wad and limonite, which are waste, and the clay also contains some chert and quartz.

#### Dominion Manganese Corporation Starts Operations

In 1943 operations on this manganese deposit were started on a modernized stripping basis. The technical management of Crimora was under the direction of H. A. Brassert & Company of New York. Alexander C. Barker, a vice president and director of this firm, became president of

Dominion Manganese Corporation and negotiated the leases and eventual sale of the mining properties from the former owners. C. F. Schaber represented H. A. Brassert & Company as manager of the enterprise at Crimora.

Under the direction of Mr. Schaber and D. E. Eilertsen, Mining Engineer in Charge of Operations, a drilling program was initiated to define the ore zones. The first holes were sunk adjacent to old test pits at what is now the Dominion cut and later a few holes were also drilled at the Crimora pit. Past records were carefully checked and a Bucyrus-Erie 22-T blast hole drill driven by a Waukesha gasoline power unit was employed to test favorable ground. All holes were vertical and at the Dominion area a total of 98 were drilled averaging in depth around

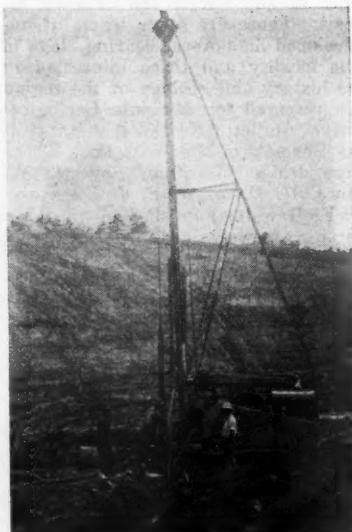
70 ft. The deepest hole reached 170 ft.—still in clay and above quartzite. The total footage for the 98 holes was 6,874  $\frac{1}{2}$ . Almost all holes were reinforced with 6-in. casing and sludges were analyzed whenever visual inspection disclosed that ore was encountered. In the Crimora pit 41 holes were drilled averaging 42  $\frac{1}{2}$  ft. per hole with a total footage of 1,751  $\frac{1}{2}$ . Drilling at the Dominion pit locality disclosed a good quantity of ore and preparations were made to start mining.

#### Selective Mining Required

Before describing methods used it must be pointed out that selective mining was a most important factor in determining where and how to operate. As the product was to meet Government specifications it had to run 44 per cent manganese with combined silica and alumina less than 25 per cent, iron under 10 per cent, zinc less than 1 per cent and less than .25 per cent phosphorus. These requirements were met and a typical analysis shows: 45 per cent manganese, iron from 2-5 per cent, silica under 10 per cent with alumina varying around 3 per cent and phosphorus .10 per cent. The highest phosphorus analysis recorded was .32 per cent, a rather rare high. To control mining there was constant grab sampling in the pits and frequent reference to the drill records. All analyses were made by the company's chemical engineer, Frank R. Keeshan, in a laboratory adjacent to the mine office.

Once the ore was blocked out at the Dominion, the overburden had to be removed and the same equipment was used for this purpose as that later employed in mining the pits. The Dominion pit was started by excavating in an oblong area, making provisions for roadways with depth. Due to the nature of the clay it was not necessary to use explosives, and aside from a few sticks of powder available to handle unusually big masses of manganese ore, blasting was not employed in the operations. As the pit progressed an average grade of 5-6 per cent was maintained on the roadways whenever possible, and scraping was planned across the central area in a manner to provide for water collection. Benching was carried out in three tiers 20 ft. high and of sufficient width to allow for roadways. Waste was hauled 500-600 ft. away and in some cases as far from the pit as 2,000 ft. As previously mentioned, old timbers from former underground workings were encountered in the pit and these had to be disposed of to avoid danger of mill stoppage.

Several types of excavating machinery were used with success. At the height of excavating in August, 1944, five Caterpillar tractors were employed, seven model D8s, one model RD8 and two D7s. These coupled to



A blast hole drill was used to test the ore zones



The mill buildings of the Dominion Manganese Corp. at Crimora.  
Note concentrate pile in the foreground



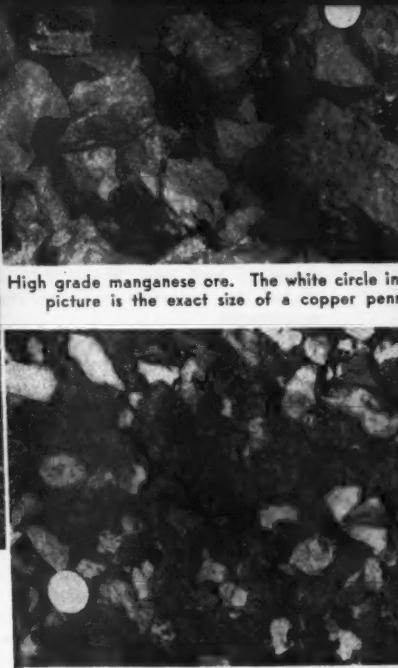
Mr. Eilertsen stands beside  
one of the Carryalls



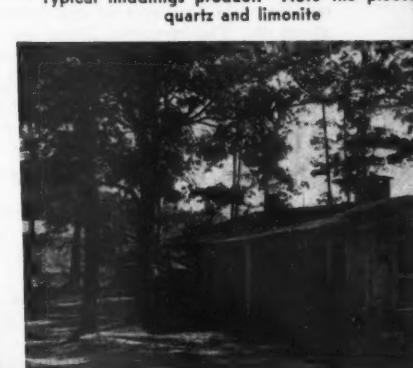
The main roadway  
into the Dominion  
Pit



Old mine timbers have  
been exposed by strip-  
ping operations at the  
Dominion Pit



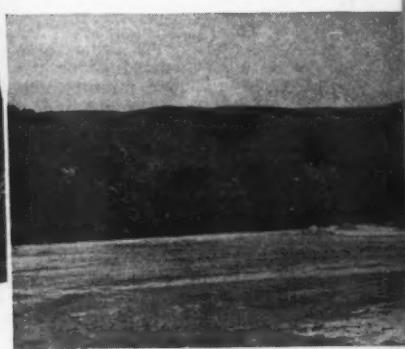
High grade manganese ore. The white circle in  
picture is the exact size of a copper penn



Typical middlings product. Note the pieces  
quartz and limonite



The administrative and engineering office at Cri



A general view of the tails pond. The Blue  
Mountains are in the background



The Dominion Pit with  
the main sump in the  
foreground

various sizes of LeTourneau Carryalls moved the major portion of the yardage. One D7 was equipped with a pusher block and another with an angle blade. The heavy RD8 Caterpillar with an angle blade was also used to handle bulk material. In addition, five Allis-Chalmers HD14 tractors with three Gar Wood Model 400 scrapers and one Model L13 completed the assemblage of excavating equipment.

The Carryalls were good for a heap load varying from 13 to 22 cubic yds. of loose material and 7 to 10 yds. of solid. In some cases a LeTourneau Rooter was dragged before the Carryalls to break up the clay and enable more efficient scraping. The total of yardage excavated was 1,470,595 of which 1,320,594 came from the Dominion pit and 150,001 from the Crimora. Of this yardage moved only 11.3 per cent was ore-bearing clay totaling 166,660 cubic yds. The balance of 88.7 per cent or 1,303,935 represented waste that had to be disposed of on the waste dumps. The maximum depth attained in the Dominion cut was 175 feet and at the Crimora about 80. The larger or Dominion cut is roughly 1,250 ft. long by 550 wide, the Crimora pit is roughly 600 ft. square.

### Uncertainties of Water Supply Were Overcome

The problem of water supply was most interesting. In order of reliability, the source of water can be listed as follows:

Source	Gal. Per Min.
1. Recirculated water from muck ponds	1,000
2. Cold Spring Creek	250
3. Old Shaft Well	1,500
4. Dominion Pit	800
Total	3,550

The mill consumed water at a rate of 1,200 gal. per minute and from the above total it would appear that the water supply was adequate as the safety factor approached three to one. In addition, a water storage tank was available for surge purposes but its capacity was not sufficient to supply a flow for any substantial period once the sources were interrupted. In an extremely dry season, the flow of water in this region can be seriously reduced as wells throughout the valley area have lowered the water table. Hot dry weather would also increase evaporation loss from the muck pond and when the deep well source diminished, the problem of water supply could become acute. Consequently several water sources had to be tapped and these efforts were justified by results. Whenever one source went dry, pumping was shifted to others, and seldom was mill

operation influenced by water shortage.

The most important source was recirculated water from the muck ponds, which were built up at the rim with Carryalls so as to serve as a containing area. The muck pond was constructed on three levels with a total area of 550,000 sq. ft. Fortunately the muck settled out very quickly from the water, otherwise the problem of handling the supply would have been far more difficult. For this purpose a Platt centrifugal single-stage pump was used driven by an International Harvester PD40 diesel power unit, this equipment delivering 1,000 gal. per minute.

From nearby Cold Spring Creek a LaLabour pump using a Continental gasoline power unit supplied additional water at a rate of 250 gal. per minute. This stream generally is flowing but like most mountain creeks is subject to considerable volume fluctuation.

An old shaft was also utilized as a well and in this case previous mine workings did not constitute a nuisance. Water from this shaft was handled by a Pomona turbine pump with a Johnson gear head driven by a 100 h. p., International Harvester diesel power unit and capable of delivering 1,500 gal. per minute from a depth of 157 ft. with fluctuations to 300 gal. per minute.

In the pits the layout was planned to permit ample sump area. A  $\frac{3}{4}$ -yd. Page bucket drag line excavator was used with a 55-ft. boom Northwest shovel to dig sumps. An American Marsh pump driven by an International Harvester UD6 diesel power unit served to pump water at a rate of 800 gal. per minute from the Dominion pit to a 100,000-gal. storage tank for mill use. The sump was always maintained at the lowest part of the pit and a depth of 10 to 12 ft. was standard. The water was pumped

through a 6-in. line connected at intervals with Dresser couplings. Two small Carver centrifugal pumps were also used for gathering purposes.

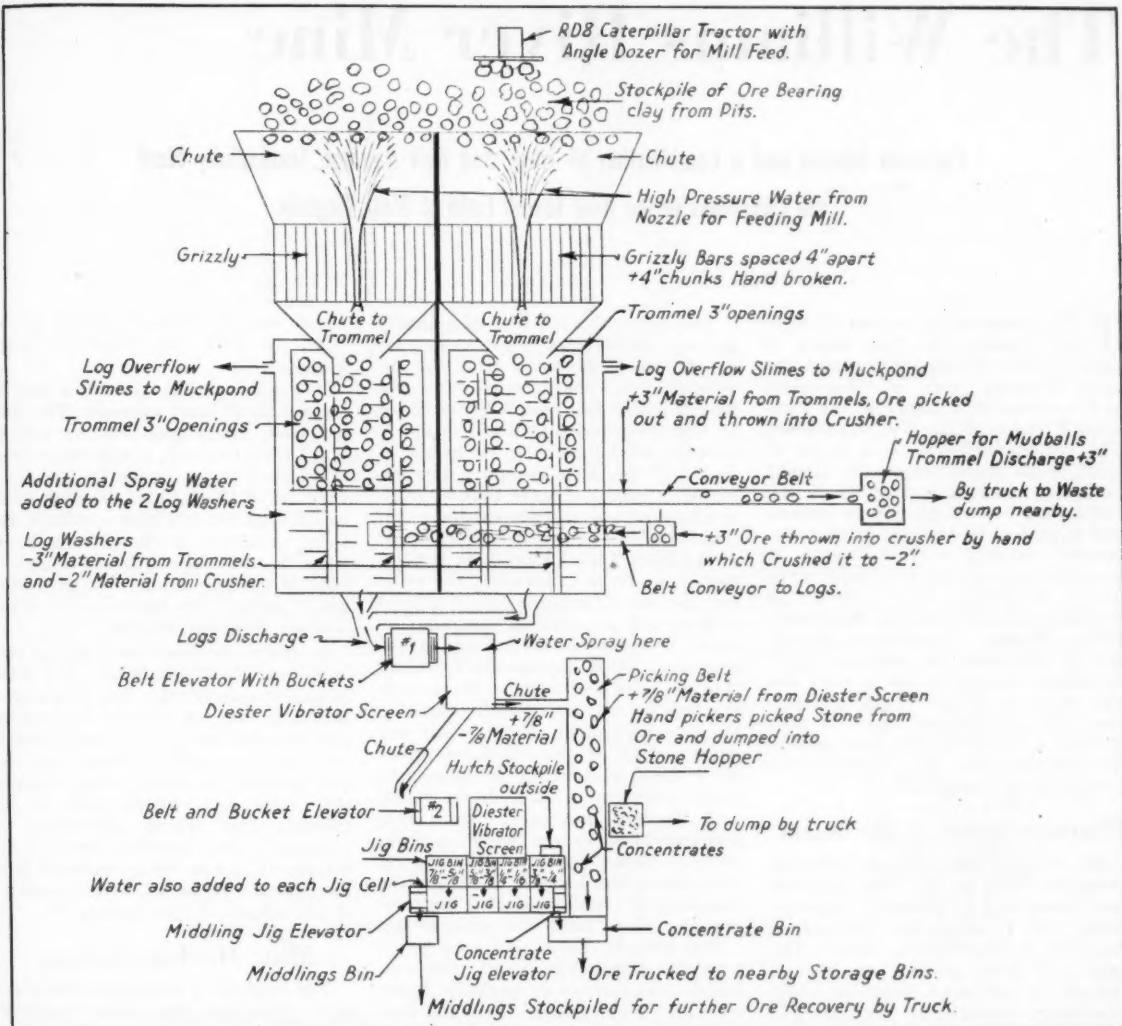
### Milling Essentially Washing and Sorting

The problem of concentration of Crimora ore is essentially that of washing away the clay and removing the quartz and limonite. The separation of the clay was not difficult, but eliminating quartz and limonite involved hand picking.

Ore-bearing clay from the pits was stocked and pushed into two chutes at the back of the mill building by bulldozer. From the chute it was fed into 4-in. grizzlies under water pressure and the oversize was broken by hand. From the grizzlies the ore went to a trommel and all material of oversize, greater than 3-in., passed to a belt where the ore was hand sorted and the mud balls eliminated for waste haulage by truck. Oversize ore was tossed by hand into a Universal jaw crusher, Model 2M (9 in. x 12 in.) and crushed to 1½ in. This ore, now mixed with the undersize from the trommels, went by belt conveyors to two parallel McLanahan and Stone 24-ft. log washers. Here the excess clay was cleaned out and sent to the muck ponds in the overflow. The log washers discharged on a belt bucket elevator and onto a Deister No. 400 Plat-O vibrating screen where a pressure water spray was applied. The  $\frac{3}{8}$ -in. oversize went to a picking belt where two to four men picked out stone and limonite and the concentrate was sent to the mill bin. The undersize from the screen was sent through a chute to a belt elevator onto another Deister screen, where four sizes were screened and sent to the jig bins. The accompanying mill diagram illustrates these stages in detail.



Tractors and carryalls were an efficient working combination



The Crimora Mill Flow Sheet

Under each jig bin a FC-3 Syntron feeder fed the sized material into four McLanahan and Stone Four Dash ore jigs. The jig concentrate was then sent to the mill bin and the hutch or fines were washed with a hose and sent to the mill concentrate bin or stocked to be rerun with middlings. The concentrate was blended at the storage bins (capacity of bins roughly 200 tons) according to order and then hauled to the Norfolk & Western Railway 2½ miles away at Crimora. A middlings product running about 26 per cent Mn was also stocked and rerun when sufficient accumulation made it desirable. These middlings were loaded up with a D7 Caterpillar tractor pulling a La Plante Choute scraper C-61 and backed over a ramp and dumped into a hopper. From the hopper the middlings passed via a gate to a belt conveyor to No. 2 elevator and thence to the jigs.

## Two Concentrates Produced

It will be seen from this description that the plant produced two concentrates, the main or No. 1 concentrate and a middlings or No. 2 concentrate. The No. 1 concentrate had a lower limit of 44 per cent manganese and the No. 2 a lower limit of 35 per cent. When the middlings were passed through the plant, concentration was raised from 26 per cent Mn to roughly 39 per cent, this constituting No. 2 product. These two concentrates were blended as required and in some cases shipped alone, depending on the particular contract being supplied. Tailings ran about 21 per cent Mn and the hutch about 30 per cent before washing.

From the time the Dominion Manganese Corporation took over until the present temporary suspension of operations, which took place in March, 1946, a total of 20,750 tons of concen-

trate was mined, averaging roughly 800 tons per month with a high in January, 1944, of 1,350 tons.

Power was generated by two diesel plants with only one running at a time and the other retained for emergencies and for use during repairs. One plant consisted of a 150-hp., Fairbanks Morse diesel engine with a General Electric AC 120 KW generator rated at 240 volts. The second plant was a 160 h.p. Superior diesel engine with an Allis-Chalmers 220-v. generator. These plants were run alternately, usually a week at a time.

The operation when going full blast employed 66 men including the office staff. Two shifts were run on a six-day operating schedule, the pits on a 10-hour shift and the mill on eight. Most of the employees came from nearby localities and lived in Crimora or vicinity, so housing was no problem. As underground work was not

(Continued on page 39)

# The Williams River Mine

## Conveyor Mining and a Combination of Track and Belt Haulage Successfully Meet the Conditions in the New Sewell Field of West Virginia

THIS operation is located in Webster County, W. Va., about 60 miles south of Clarksburg and the same distance east of Charleston, and is served by a branch of the Richwood Division of the B & O Railroad. The mining property is a tract of 3,000 acres leased from the Gauley Company and is a part of the Sewell Field that has recently been opened and is said to be the last large undeveloped coal area in West Virginia. A complete account of this field, written by S. Dunlap Brady, consulting engineer, was published in the March, 1944, Mining Congress Journal, and he described the coal as "semi-smokeless, medium volatile with low ash (around 3.4 per cent), low sulphur (around 0.7 per cent), a high B. T. U. (around 14,700), free burning for general use and suitable for metallurgical purposes."

### Characteristics of the Seam

The seam at this property outcrops along the front of the lease at a sea level elevation of 2600 ft., approximately 300 ft. above the railroad on the bank of the Williams River. The mine is a drift opening, the coal is dumped at the head house at seam level and is brought by belt conveyor down the mountain to the preparation plant on the railroad. This operation was started in July 1944 and the accompanying map shows the development that has been made over the past two years up to July 1946.

The physical conditions as indicated by the preliminary prospecting and in the mine workings thus far developed are characteristic of the Sewell coal in this section of the State, in that some irregularities are apt to be encountered both in the height of coal and the seam contour. For example, a height of more than 50 in. is reached at several places along the main entries and in First West, while at the face of No. 1 East there is a low section of 30 in. However, the prospecting records indicate this to be local and as will be seen on the map, the entry is being driven off-set to the right and left to explore the extent of this low area and to drive through to the thicker coal beyond. Recognizing the varying height of the seam, the management of the Williams River Mine have selected all equipment to work in heights as low as 26 in. should such become necessary. Since this equipment of course works equally well in higher coal, the company by this action has insured itself against stoppage or interruptions to the mining plan from local thin seam areas.

The general dip in this area is toward the east and so far has not been heavy—an average of perhaps 2 per cent—but local grades for short distances may run as high as 10 per cent. This, however, has not proved much of a difficulty as far as the haulage is concerned. The main haulageways are brushed for height, and when a local roll or dip is encountered,

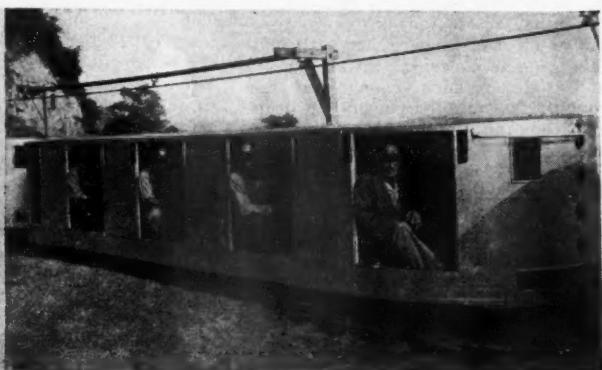
either top or bottom is taken as desired to give the required track gradient.

The other mining conditions may be classed as at least average. The roof has been fairly good and as will be noted from the map, a high percentage of extraction was made in the pillar work off of First East, although there was a little bad top here—perhaps due to its proximity to the outcrop. Some water has been encountered, enough to require several pumps for gathering and, looking to the future, a 6 in. pipeline is laid to the outside.

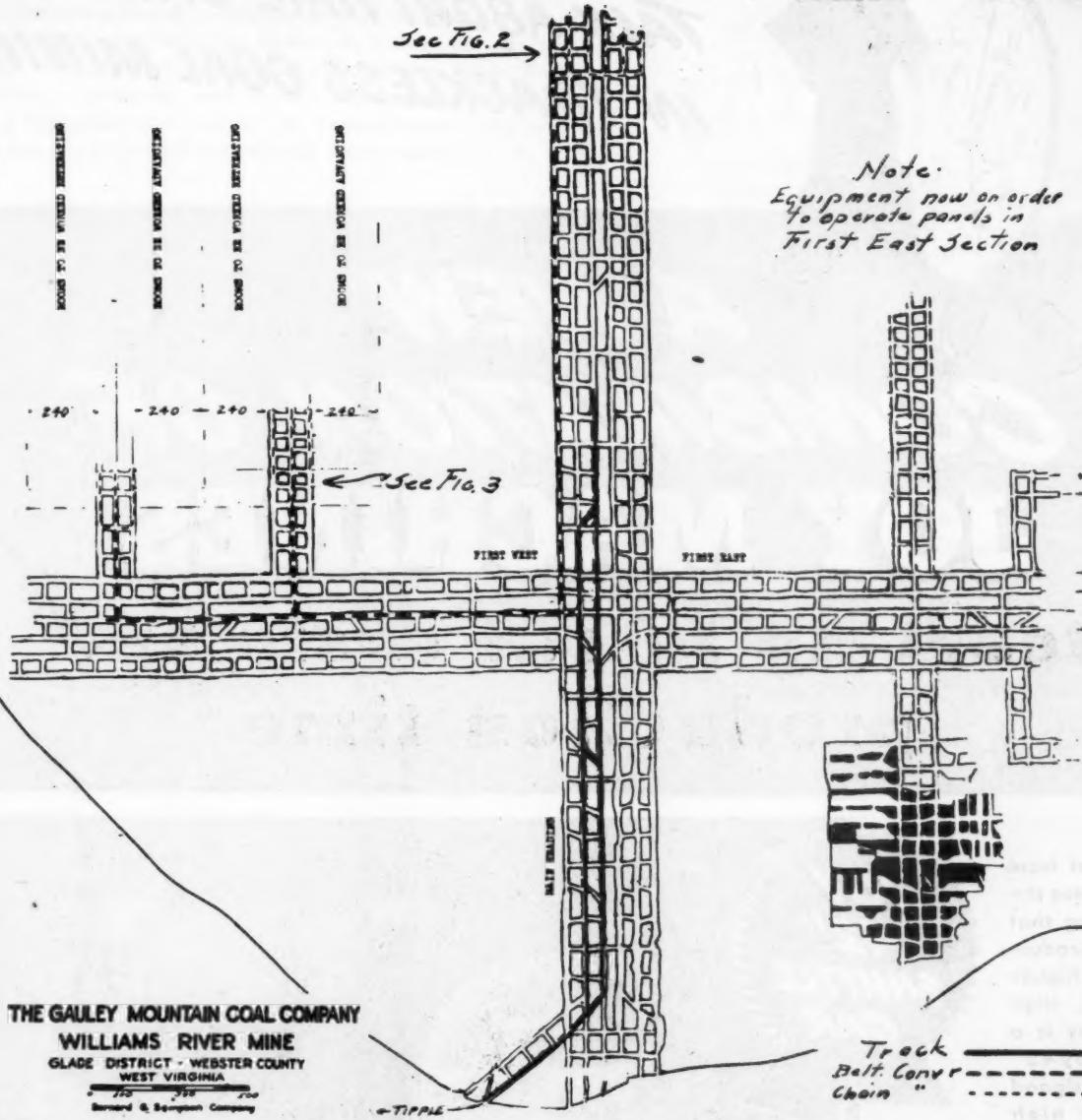
So far no gas has been found in this mine and the ventilation has been comparatively simple. The entries are driven in sets of six, the two center ones are the intakes and each outside pair is a separate return split. As will be noted, the chain pillars between the center and outside pairs is cut through only where necessary. A temporary fan, installed for the development, is now being replaced by a permanent 6 ft. LaDel, with a capacity of 125,000 cu. ft. per minute.

### Mine Haulage System

The haulage is with mine track and belts. The main line from the tipple to the intersection with First East and West is 60 lb. rail on treated ties with track at 44 in. gage. This as will be seen on the map is doubled tracked and will be extended to the Second East and West panels as soon



Special man trip cars are an added safety feature



as the development has reached that point. From the main line, First West entry has a 30-in. belt 1500 ft. long which hauls from the first and second room panels. Each room entry also has a 30-in. belt which is extended in 300 ft. lengths as the entries are driven. In the main entries, a 30-in. belt is used to advance the entries, located in the left-hand entry as shown on the map; this is also extended periodically as the entries are driven and will continue until it reaches its maximum of 1500 ft. At that time a second belt will be installed. Chain conveyors loading onto the belts are used for working the rooms and also for driving the entries as shown in Fig. 2 and 3 and will be described later. All belts are by LaDel, 30 in. wide and running at a speed of 225

ft. per minute. The chain conveyors are by Jeffrey and LaDel.

On the main line haulageway at the mine car loading point, the track is lowered by taking up bottom so that the main belt discharges directly into mine cars. A swinging chute mounted on a round bar above the cars diverts the coal from the belt into the car ahead or to the rear so that the trip can be moved without spillage or stopping the belt. A 5 h. p. Brown-Fayre Hoist moves the cars which are 192 cu. ft. capacity, steel construction, furnished by Watt Wheel and Car Company.

The two main haulage ways are brushed for height and, depending on the grade, either top or bottom is taken, depending on which is needed to secure the best track gradient. The

rock is drilled by compressed air and loaded by a Sullivan Slusher, which is a type of scraper hoist with the scraper box pulled by a rope for a comparatively short distance and up onto a loading ramp where the rock is discharged into mine cars. This ramp is track mounted and moved ahead as the rock work progresses. (See Fig. 2).

An interesting feature of the haulage system is a special mantrip car, as illustrated in the accompanying photograph; three of these are now in service, each one having a seating capacity for 38 men. The cars, built by Differential Steel Car Co., are completely insulated and are of solid steel construction with comfortable riding seats. Further safety measures at the mine are electric cap lamps,

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### Mining System

All mining is by hand loading on chain conveyors which take the coal from the working faces to cross conveyors which in turn transport to the belt. These cross conveyors are moved ahead at 300 ft. intervals and the belt extended accordingly. A standard operating unit consists of six working faces which may be either six entries, in the case of main or panel entry development or three entries and three rooms in the case of a room entry development, or six rooms retreating after the entry has driven to its barrier. The general layout for the conveyors is shown in Figs. 2 and 3.

The method of working follows the conventional conveyor mining procedure. The coal is undercut by a short-wall machine either of the Goodman or Sullivan type, drilled with a Chicago Pneumatic electric coal drill and shot with permissible explosive. The coal is hand shoveled onto the conveyor. In the room work, a face conveyor is laid parallel to the face while in the entry development the coal is loaded directly onto the chain and the face conveyors are used to drive the cross cuts. A crew of three men are in each place working on a continuous cycle to do all work of cutting, drilling, loading, timbering, etc. This makes a total of 18 face men in one operating unit; each unit has a foreman and there are also of course electricians and mechanics for maintenance as well as men for general clean-up. Supplies are brought to the face by the conveyors reversed.

In the room panels, as the three entries advance, three rooms are mined advancing so as to give a working unit of six places. (See Fig. 3). These are on 55 ft. centers and are driven 40 ft. wide, leaving a 15-ft. pillar between which, however, is almost completely mined out by slab cuts after the room has been driven up. The narrow work will advance much faster than the rooms so when the entries reach the panel limit, only a few of the advancing rooms will have been worked out; at that time the mining will be reversed and the rooms will be worked retreating off both sides of the entry. This will also have six places—two rooms off each side and two chain pillars.

### Power

The power is purchased from the Monongahela Power Company at 2300 V. A. C. and converted to 250 vdc by a 300 kw General Electric mercury arc rectifier. This is track mounted on three trucks. At present it is located at the drift mouth but will be moved underground as the workings progress.

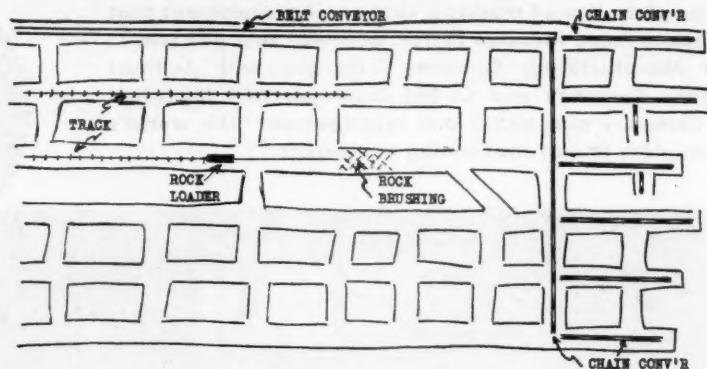


Fig. 2. Main Heading Development

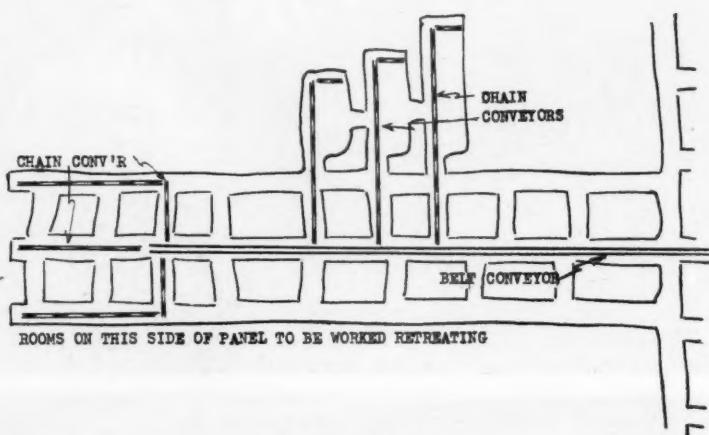


Fig. 3. Room Panel Development

and the a. c. line will be brought to it through a drill hole. From the substation the d. c. power is now taken underground through the trolley and with two feeders consisting of a 500,000 cm and a 4/0 insulated cable.

The power is taken into each working face by a three-conductor insulated cable. This is made sectional so as to avoid the danger of fire from coiling or piling; two lengths are 50 ft. each and two are 100 ft., making a total length of 300 ft. The connections between the cable as furnished by the Mines Equipment Company are the "fire hose type" with the plugs so arranged that wrong connections are impossible. At each working face there is a junction box from which separate leads are taken to the cutting machine, drill and face conveyor.

The belt controls are all located at the main belt discharge station on the main haulageway. These are connected so that the starting is in sequence, the main belt starting first, then the room entry belt and so on back to the face. The face machines are on a separate circuit and are not connected to the belt power circuit so that the

face machines may be started or stopped independently of the belt system.

### Surface Plant

As previously stated the seam is approximately 300 ft. above the railroad at the river. Cars come from the drift mouth to a rotary dump tipple located about 500 ft. from the mine opening, and with the necessary side tracks for switching and storing. A bin under the dump feeds by a reciprocal plate onto a 36-in. belt which is 1500 ft. long and lowers the coal a height of 285 ft. to the screening plant at the railroad. This, as illustrated, is on a slope of 14½° for about two-thirds its length and then levels off by a vertical curve to the tipple approach.

The seam is comparatively free from impurities so that mechanical preparation has not proven necessary as a satisfactory market product can be prepared over picking tables. The main belt discharges onto a set of shaking screens which now prepare four sizes but will eventually make five grades of coal loaded onto five separate railroad tracks. The fine

sizes are re-screened over a vibrator but for the larger sizes the shaker gives adequate separation. Four loading booms are installed for loading railroad cars, each has the conventional picking table section where slate is removed by hand. The tipple structure is of wood construction but the trestle for the conveyor gallery is of steel. All buildings are covered with galvanized iron siding. The equipment was furnished by Kanawha Manufacturing Company.

Near the mine mouth are the usual plant buildings—shops, office and supply house. Supplies are brought to the mine by truck on a road up the side of the mountain that was constructed by the coal company. This road has very good grade and alignment adaptable to heavy hauling and a rock base that makes it suitable for all-year use.

An unusual aspect of the outside plant is the lack of the customary mining town. This company, in keeping with the modern trend has built no "camp." Much of the country in this vicinity is rolling farm land, with several small towns, where most of the miners have attractive homes with plenty of room for gardening. Good roads throughout the region give easy transportation to and from the mine.

### Conclusion

As previously stated, this mine was opened just two years ago and, in view of manpower shortages and delays in obtaining material, has made excellent progress. There are in present operation three units of six places each. These are producing an output of 1200 tons per day of two shifts. Additional equipment now on order will increase this to 1500 tons. All planning, construction and development



Coal is lowered 285 ft. by belt conveyor

have been under the direction of Ogden B. Hewitt, president, R. H. Morris, vice president, assisted by Messrs. M. L. Alley, general manager and

Sam S. Clark, superintendent, all of The Gauley Mountain Coal Company. To these men goes the credit for a job well done.

## Open Pit Mining For Manganese

(Continued from page 33)

involved it was comparatively easy to train operators for the tractors and as many of the workmen had used them before in farming or on road jobs, all were more or less familiar with the equipment. The surroundings of the Blue Ridge country are pleasant and climate in Virginia is not extreme; hence the difficulties of long winters and rainy seasons do not enter when mining in the open in this region.

### The Manganese "Achilles Heel"

What the future of such operations will be is, of course, anyone's guess. Domestic manganese can seldom compete on the open market with for-

eign imports, but properties which received attention during the war, such as Crimora and others, constitute an emergency reserve which may become highly important in case of need. Steel without manganese is very much like an automobile without a tire. The auto can go but it is a poor auto.

Manganese in wartime becomes a "must" metal. Col. C. T. Harris, Director of the Planning Branch, Office of the Assistant Secretary of War, stated in testimony before the Military Affairs Committee of the House of Representatives, February 9, 1937, that:

"Naturally some of the materials have a higher importance and are more difficult to obtain than others. I place manganese at the top of the list, chromium next. . . . Researches have been made for years and have not been particularly successful in developing materials to supply the

shortage. There is no substitute for manganese. Without manganese the steel industry would produce a very inferior quality of steel, and there is no substitute." It is evident from these remarks that the importance of the manganese "Achilles Heel" is recognized.



## **INCREASED VENTILATION—Its Effect On Dust Concentration in Mine Air**

**I**N AIRWAYS where air velocities of higher magnitude occur the impact of large airborne dust particles upon the body can be readily detected and in places where increased ventilation has been contemplated some question has arisen as to the effect of increased air velocities gathering and transporting residual dust.

To determine the effect of increased ventilation on dust concentrations in mine air, experimental work was conducted and the results derived therefrom are presented in this paper.

Figure 1 is descriptive of the location selected for conducting the experimental work. The location was the 1900 level of a non-operating mine primarily chosen because there was available an airstream whose contained initial dust concentration was negligible and into which dust concentrations of various magnitudes could be artificially introduced without affecting the breathing zones of workers.

This level served as the horizontal offset for one of the parallel exhaust airways of the mine. The horizontal distance of this offset is approximately 900 ft.

The test airway contained both a semi-blocky rock section and a smooth lined section with two near  $90^\circ$  turns intervening which insured turbulence in the air stream before its delivery into the on-line test section of the smooth-lined airway.

A control brattice was installed in 1902 Lateral east 10' west of 1905

Presented to the Lake Superior Mining Section, National Safety Council, at Duluth, Minn.

## **Underground Experiments Indicate Definite Benefits from Increased Air Velocities in the Presence of High Dust Counts**

By A. S. RICHARDSON  
J. W. WARREN  
W. C. WILLIAMSON  
Anaconda Copper Mining Co.

Crosscut south. The pressure differential across this brattice when sealed to air movement was approximately 4.0" H<sub>2</sub>O static pressure.

Through the center of the 9 ft. by 8 ft. brattice was installed a square duct, having an inside dimension of 28 in. and 40 ft. long, with its longitudinal axis in the centerline of the airway. The upstream intake end of the duct extended 2 ft. from the brattice and was provided with regulators which could be closed from both sides toward the vertical centerline of the opening. Through the resulting slot between the regulators any desired air volume with the introduced dust concentrations could be drawn.

In the brattice between the duct periphery and the airway groundline additional regulators were installed through which desired volumes of

relatively dust-free air could be drawn

The dust concentrations in the air stream within the duct were artificially produced by introducing the dust from a special funnel with a contained orifice. The funnel discharge was located near the top of the regulated orifice at the duct inlet. The funnel shaped dust container was vibrated by the electro-magnet mechanism of a common door bell to insure a uniform and constant dust feed.

Complete dispersion of the dust leaving the funnel orifice into the air-stream within the duct was insured by a compressed air jet discharging horizontally near the centerline of the duct inlet orifice.

The dust laden air flow within the duct began to diffuse with the controlled annular flow of dust-free air

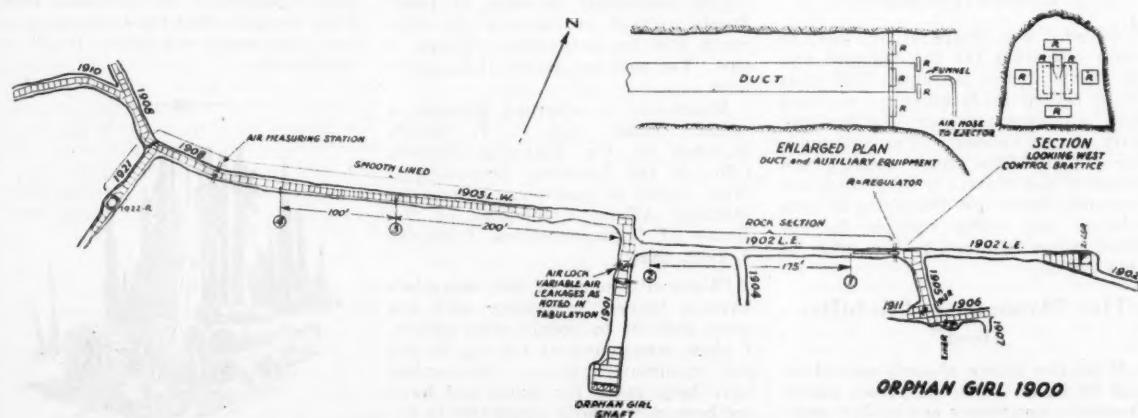


Figure 1. The experimental workings in a non-operating mine

surrounding the duct upon reaching the immediate downstream vicinity of the duct.

Results of samples taken under various conditions indicated that a homogeneous concentration had been obtained in the air stream at location 2, Figure 2. The samples were drawn simultaneously from the center of equal areas in a plane normal to the air flow. This location was 375 ft. west of the duct discharge.

Since the number concentration of these samples were relatively uniform and additional samples collected by the same procedure at the other downstream locations indicated uniformity of concentration throughout the sample location the method of collecting one sample from the center of each sample location was warranted.

Samples for number concentration were collected by the standard impinger method using the compressed air ejector device. The collecting medium used was normal propyl alcohol ( $C_2H_5OH$ ), practical grade.

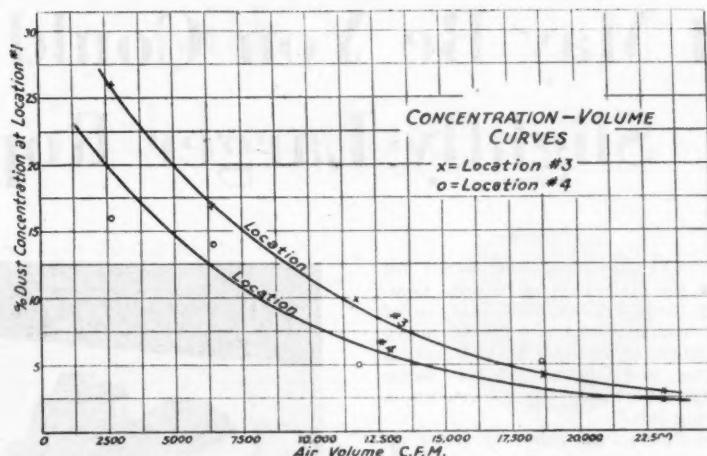


Figure 2

by plotting the air volumes at location No. 3 and Location No. 4 against the per cent dust concentration at these locations in terms of per cent

From the results obtained there is indicated a definite benefit in increasing air velocities where high initial dust concentrations are present. The

TABLE A  
DATA—INCREASED VENTILATION VS. DUST CONCENTRATIONS

Test No.	Location #1		Location #2		Ratios		Location #3		Ratios		Location #4		Ratios	
	Dust Conc.	Air Vol.	Dust Conc.	Air Vol.	Conc. #2 Vol. #2	Air Dilution	Dust Conc.	Air Vol.	Conc. #3 Vol. #3	Air Dilution	Dust Conc.	Air Vol.	Conc. #4 Vol. #4	Air Dilution
	M/cu. ft.	CFM	M/cu. ft.	CFM	M/cu. ft.	CFM	M/cu. ft.	CFM	M/cu. ft.	CFM	M/cu. ft.	CFM	M/cu. ft.	CFM
1.....	121.0	1,365	60.9	1,900	0.50	1.39	31.7	2,700	0.26	1.98	19.8	2,700	0.16	1.98
2.....	168.0	1,365	30.7	5,750	0.18	4.21	29.2	6,460	0.17	4.72	22.7	6,450	0.14	4.72
3.....	153.0	1,450	19.3	11,150	0.13	7.69	15.6	11,750	0.10	8.10	7.7	11,750	0.05	8.10
4.....	172.0	1,365	8.3	18,050	0.048	18.2	7.3	18,550	0.042	13.6	9.2	18,550	0.053	13.6
5.....	114.0	1,420	5.4	22,750	0.047	16.0	3.6	23,150	0.031	16.3	2.9	23,150	0.025	16.3

Quantitation of number concentration was made by the micro-projector method at 1,000 diameters.

Personnel collecting experimental data downstream wore respiratory protective devices while dust concentrations were present.

The time lag characteristic between each sample location was measured for each test with the aid of a smoke cloud. This procedure insured the sampling of the same atmosphere at each sample location.

The dust used for dispersion into the air stream was kept dry to prevent agglomeration of particles which would otherwise occur.

Results of particle-size samples taken during the experimental work disclosed that the air-borne dust had a geometric mean of 1.05 microns and a standard geometric deviation of 2.55. These samples were collected with a multiple-head Owens jet dust sampler and measurement by the micro-projector method at 10,000 diameters.

The data resulting from the experimental work is shown in Table A.

Figure 2 shows the respective curves derived from data in Table A

TABLE B

Test No.	Location #1		Location #2		Leakage		Location #3	
	Flow through Duct C. F. M.	Flow through Brattice C. F. M.	Volume C. F. M.	Shaft Air Lock C. F. M.	C. F. M.	C. F. M.	C. F. M.	C. F. M.
1.....	1,365	535	1,900	800	2,700			
2.....	1,365	4,385	5,750	700	6,450			
3.....	1,450	9,700	11,150	600	11,750			
4.....	1,365	16,685	18,050	500	18,550			
5.....	1,420	21,330	22,750	400	23,150			

dust concentration at location No. 1.

When the static pressure differential across the control brattice at location 1 was at a maximum the air leakage through the air lock near the shaft was also at a maximum. The data is shown in Table B.

reduction is accomplished by impingement and settlement upon the surfaces exposed in the airway and by dilution due to the increase in air volume.

### Conclusion

The data indicates that the reduction in dust concentrations is not due to the dilution factor alone.

It is known that in transmission ducts of auxiliary ventilation where high air velocities are present there exists a dust deposition upon the inner periphery of these ducts.



# It May Be You Could Use a Slightly Larger Rope

**E.** STYRIS, purchasing agent for the Isbell Construction Company, Reno, Nev., says: "It is my belief that many manufacturers of heavy equipment of all types are not making sheave and drum grooves large enough. Certainly our experience is proving this."

He clinched his belief by citing an example of two power shovels, both 2½-yd. capacity, both working side by side, doing the same type of work, handling the same type of material, both operated by skilled shovel runners. The only difference between the two outfits was that Shovel A was equipped with 1-in. diameter rope, while the sheave grooves on Shovel B had been re-grooved and equipped with 1½-in. rope. The two ropes were identical in construction: 6x19, Preformed Regular Lay, Improved Plow Steel.

The service records of one run showed that the 1½-in. rope which had been installed on Shovel B moved a total of 257,967 tons of material, while the 1-in. rope on Shovel A turned in a volume of only 112,184 tons. Same job, same conditions.

Mr. Styris may have a point here. At any rate his management is currently re-grooving the sheaves and drums on all their equipment (as it becomes necessary) to accommodate a slightly larger wire rope, expecting thereby to double the service of their wire ropes at a very slight increase in rope cost.

Whether or not such a policy could be applied to all cable-operated equipment seems debatable. However, it is only probable that machine designers are building sheaves and drums to diameters suitable to the old, ordinary, non-preformed wire rope. They may be failing to take into consideration the extreme flexibility of preformed wire rope and its ability to much better withstand bending fatigue—thus making it possible to use, with preformed rope, a smaller diameter drum or sheave.

The current table for calculating minimum sheave and drum diameters is shown herewith.

This table, originally scaled for ordinary, non-preformed wire rope, has been used for uncounted years. Actually it is obsolete so far as preformed is concerned as proved by Mr. Styris' recent parallelism. In his case the two ropes were, respectively, 1-in. and



1½-in. in diameter. Since the rope construction was 6x19 that meant, if the machine designer were to follow the above table literally, the sheave diameter for the 1-in. rope should be 30 in. while the one for the 1½-in. rope should be 34 in. in diameter. Yet here was a 1½-in. rope giving twice the service of a 1-in. rope on a sheave designed for the latter. And all because it had been made more easy to bend by being preformed.

It is only reasonable to believe that when endowed with flexibility a larger diameter and stronger rope will far

outlast a smaller rope. Since at the present time over half of all the wire rope made and used in the United States is preformed what really needs to be done is for the wire rope industry to formulate a new table for sheave and drum diameters based on preformed's greater flexibility. In the meantime, it might be worthwhile for many operators to consider re-grooving their present equipment to accommodate a larger and stronger rope. Before actually doing so, however, it would be the better part of wisdom to consult a wire rope engineer.

TABLE FOR CALCULATING MINIMUM SHEAVE AND DRUM DIAMETERS

For 6x7 Construction .....	42 times diameter of rope
For 6x19 Seale Construction .....	34 times diameter of rope
For 6x16 Filler Wire Construction .....	30 times diameter of rope
For 6x19 Warrington Construction .....	30 times diameter of rope
For Flattened Strand .....	30 times diameter of rope
For 8x19 Seale Construction .....	26 times diameter of rope
For 6x19 Filler Wire .....	26 times diameter of rope
For 6x22 Filler Wire .....	23 times diameter of rope
For 8x19 Warrington .....	21 times diameter of rope
For 8x19 Filler Wire .....	21 times diameter of rope
For 6x37 Seale .....	18 times diameter of rope
For 6x41 .....	18 times diameter of rope

# Pillar Recovery with Mechanical Loading

*A Preliminary Report on a Study Being Made  
By the Committee on Roof Action*

THE depletion of some of our best coal seams is beginning to cause considerable concern in certain quarters of the industry and it is being realized that "conservation of a natural resource" has some direct application to coal. To many this is a new idea as our coal reserves have always been estimated at astronomical figures; but actually these estimates cover a wide range of geography, seam heights and qualities so when we consider the coal in some local field or with some preferred quality we find that there is not an inexhaustible supply and there is a need to conserve it. Not so much for future generations but for our own use today.

However, there is more to the question than saving some high quality seams; when conservation is applied to coal mining, or to put it another way, when an increased tonnage is produced from an area, indirect cost savings often result. Or, in reverse, when coal is left unmined, a value which the mine operator has partially paid for is being lost. That is to say, the cost of deadwork when driving a room entry—installing track and trolley (or conveyors), building doors and brattices, laying pipe for drainage and sprinkling, setting timbers, handling rock and paying for yardage—all goes against the coal in the panel and naturally the less coal mined from the rooms the



higher will be the deadwork cost per ton. This point is often overlooked in figuring pillar recovery.

Before proceeding further with this discussion or considering in detail several questions relating to coal extraction, it may be well first to clarify what is meant by a "recovery percentage." This term is used quite loosely and is given many meanings; it may be based on the extraction made over the entire area of a mine or just on a panel section or may



Fig. 1. An example of high recovery with hand mining

refer only to the pillars of one room entry. As each of these bases will give a different figure, even in the same mine, a recovery percentage should be qualified as to the method on which it is made. The next point is to agree that a 100 per cent extraction in mining is like "infinity" in mathematics; something that can be approached in theory but never actually reached in practice.

The foregoing is a matter of simple fact, because some coal loss is unavoidable. For example, pillars must be left unmined as permanent supports for certain surface features such as towns, structures, streams, railroads, highways, oil and gas wells. Also, barrier pillars must be left to protect underground haulageways and air courses, although such protection is temporary in that the pillars can be located in such a way as to be ultimately recoverable. Then, when we come to the actual pillar mining, small stumps are sometimes lost through some geologic condition such as faults or clay veins or sometimes bad top, and finally, even with the best engineering and operating technique, the roof does not always cave as planned.

However, in spite of such difficulties, a large number of companies do make a high coal recovery; this goes back quite a number of years as methods of pillar extraction were first developed in the days of hand loading. With the growth of mechanized mining, modifications of hand systems have been designed and today we have many examples of pillar recovery in both high and low coal and with all types of equipment—mobile and stationary loaders, duckbills and hand loading on conveyors. Depending on physical conditions, different mining plans are used—from wide rooms with narrow pillars to narrow rooms with wide pillars, from advancing to full retreating panels and with fracture lines ranging from the conventional 45 degrees to several room pillars retreating abreast. But whatever the method or equipment used, pillar mining requires a high degree of skill on the part of everyone concerned—the engineers, the supervisors and the workmen at the face.

In the belief that coal recovery is becoming a matter of increasing importance to the industry, the Roof Committee is undertaking a study of this subject. It is realized that this offers quite a wide scope and as a beginning, the committee is narrowing its study to collecting general accounts of methods and results by companies who have had many years of recovery experience. Several such accounts are presented here.

These mines are all using mobile mechanical loaders in the block system and are operating the Pittsburgh seam. This coal is approximately 7 ft. high (8 ft. in some localities)

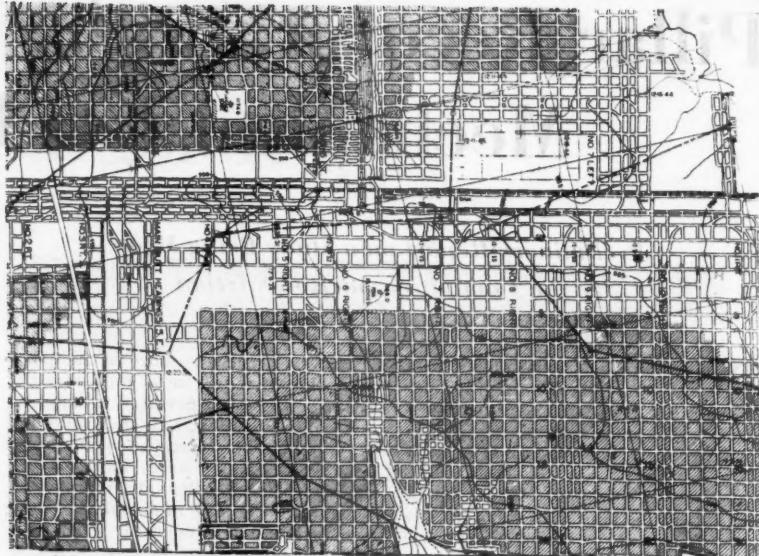


Fig. 2. Completing the last panel and starting back with the main barriers

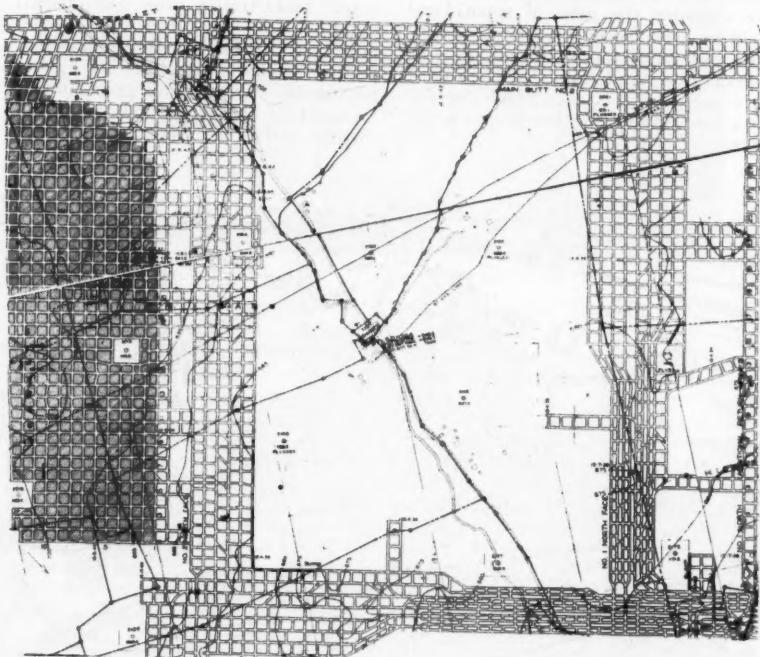


Fig. 3. Developing for high extraction with mobile mechanical loading

under top that can be classed as "not good" and usually with a cover depth of around 200 to 400 ft.; the overlying strata is such that roof breaks and subsidences occur over the mined areas and with systematic fracture lines, squeezes are avoided. It should be included as a part of this report that pillar extraction has long been the standard practice of these companies and they feel that to secure a high yield of coal per acre is operating economy.

### Company A

This company operating several mines in Northern West Virginia and from 1910 to 1945 inclusive, produced approximately 144,000,000 net tons of coal, 78,000,000 tons, or 54 per cent of the tonnage being from pillar mining. The ratio of recovery to the mineable portion of seam throughout the 36-year period is estimated at 90 per cent. Hand loading directly into mine cars was the method of mining in ef-

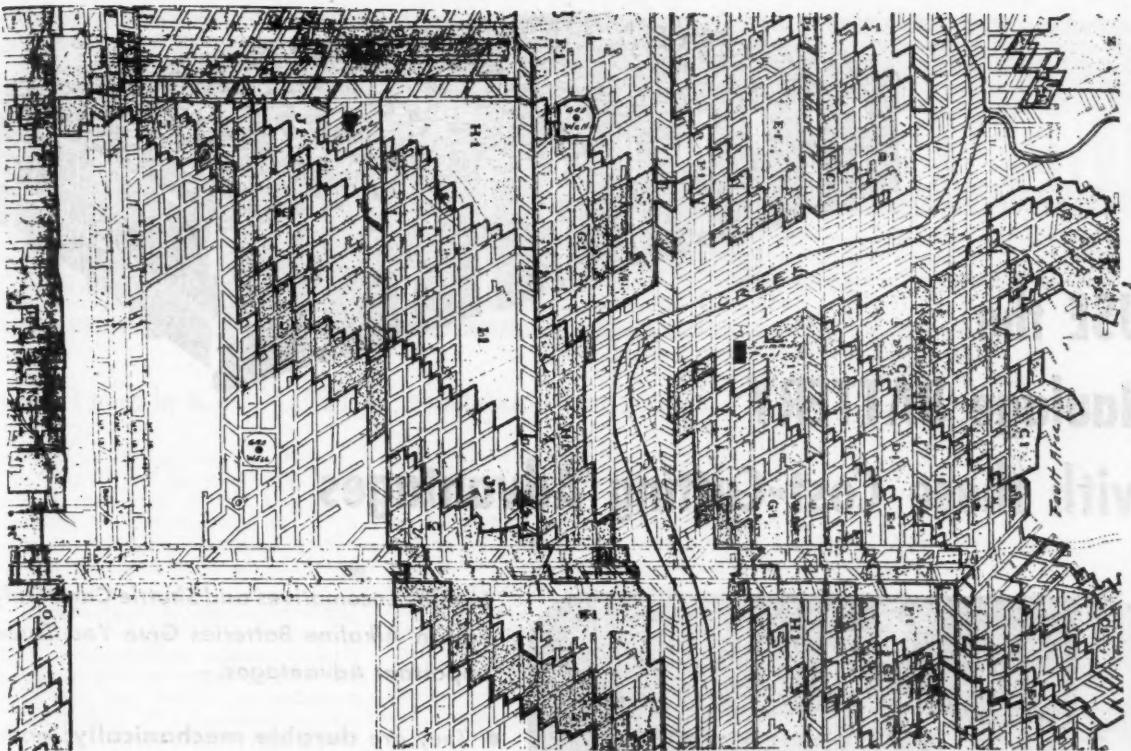


Fig. 4. Systematic fracture lines prevent pillar coal losses

feet until 1939, but at the present time, all mines are mechanized with large capacity caterpillar or track-mounted loading machines, operating one of three methods: (1) loading directly into 3.2 ton capacity mine cars; (2) loading into trailing cable shuttle cars that in turn load into 3.2 ton capacity mine cars; (3) high capacity machines loading directly into 9 to 10.5 ton mine cars. The latest type cutting machines, providing for both top or bottom cutting, and shearing, are being used. The production varies from 30 to 40 tons per cut, depending on the width of the entries or pillar splits. Pillar panels are being projected to permit development and complete extraction of the pillars over a period not in excess of one year.

Examples of the methods of this company are illustrated in Figs. 1, 2 and 3. Figs. 1 and 2 are in a mine which was a hand loading operation, opened a number of years ago and now nearing completion. Its area, which during the life of the property has been worked by several openings, is about three miles long varying from one to two miles wide, but all the territory is now practically mined out with only barrier pillars remaining. Fig. 1 is a section near the main drift mouth; the area shown is 11,000 ft. x 7500 ft. and within the outcrop contains approximately 1500 acres of coal.

This was mined long before the days of mechanization and is an excellent example of a high percentage of coal extraction by hand loading. As will be seen, nothing has been left unmined except the barrier pillars for the main haulageways. Between this area and that shown in Fig. 2 is a distance of one mile, measured along the main haulage, all of which has been mined out to approximately the same degree as that shown in Fig. 1.

Fig. 2 covers the area at the extreme limit of this property and the workings here are starting the final barrier pillar recovery. As the map shows, the last working panel on the left is nearing completion and the barrier pillar of the main butt headings to the right is already retreating. All mining here is by tractor mounted mechanical loaders with shuttle cars.

Fig. 3 is a section of another mine of this company, that started with hand loading but subsequently became mechanized and is now worked entirely with tractor loaders. This map shows the later stages of the evolution from hand to mechanical mining (note how the entry centers have been changed) and the present live workings illustrate a mining system designed and operated for a high percentage of extraction. Special attention is called to the entry development which follows the same general

plan as the rooms and provides for the pillar recovery to be made later.

#### Company B

This company operates track-mounted cutters and loaders with large capacity mine cars, using the block system, on a 60° angle as shown in Fig. 4. During a recent period in which over 800,000 tons were produced, an estimated 96.35 per cent pillar recovery was made. Fig. 4, giving a detailed view of the mining and extraction system is of further interest in illustrating several types of unavoidable coal losses. Through the right-center portion of the map are the pillars left in as protection for a surface stream. Near the creek is the support for a swimming pool and in the upper left is a similar support for a surface building; also there will be seen the barriers for two gas wells. Finally, on the extreme right is a small fault area. However, when added up, all of these losses comprise only a small percentage of the mining area and the main point to be stressed is that none of them have interfered with the orderly and systematic pillar recovery. The progress, as indicated by the survey plotting, shows how well the fracture lines have been maintained over this area which, within the boundary of the map, contains approximately 170 acres of coal.



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# WHEELS OF GOVERNMENT

As Viewed by A. W. DICKINSON of the American Mining Congress

VOTING adjournment to January 3, 1947, the Seventy-ninth Congress ceased its labors August 2. Barring the remote possibility of a special session, all legislation remaining on the calendar or in committee is dead.

Despite Federal revenues exceeding \$43 billion in 1944 and \$40 billion in 1945, congressional leaders directly concerned with legislation on tax levies state that they look for no reduction in individual or corporation income tax rates before 1948. Work of the State Department in preparation for the negotiation of Foreign Trade Agreements next spring will carry on, with expected publication in December of the list of commodities subject to negotiation for reductions in duties. There will be no congressional investigation of management-labor relations during the recess, although the White House has indicated that an inter-departmental study of the industrial relations field may be undertaken.

Of pointed interest will be the effect of the "Legislative Reorganization Act of 1946," which consolidates the 32 standing committees of the Senate into 15, and reduces those of the House from 48 to 19. This is a revolutionary realignment the results of which can only be appraised after the Eightieth Congress has been organized and has functioned for at least one session.

## OPA Extended

The President's veto of the OPA extension bill over the June 30 week-end resulted in a three and one-half weeks' cessation of OPA operation. Meanwhile Senate labors and conference action produced a bill which the President approved at 4:05 p. m., July 25. The law as enacted differs in two main respects from the measure which the President vetoed. The Taft amendment, discussed last month, was replaced by a section basing current prices on the 1940 calendar or fiscal year prices, plus average increases in costs since then, but gives OPA discretionary authority to ignore the for-

mula when it finds a producer is making current production costs plus a "reasonable profit." Further, while the bill vetoed by the President exempted no specific commodities from control, the new bill exempted many basic food items, but the law as enacted leaves it up to the Decontrol Board to decide whether these items shall remain out from under control or be recontrolled. The new law authorizes expenditure of \$100 million for copper, lead and zinc premium payments and the language of the McFarland amendment remains the same as in the version vetoed by the President.

Immediately following the veto of the first OPA bill the McFarland bill was reintroduced carrying provisions for extension of the Premium Price Plan and transferring to the RFC all functions of the Quota Committee and of the OPA and CPA pertaining to administration of the Plan. Provision was made that premiums will be calculated "on the basis of the monthly average price quotations in recognized trade journals in place of the prior basis of maximum prices." Thus the plan could have operated in conjunction with a free market for copper, lead and zinc, and changes in premium rates would have been made monthly to the extent required by changes in average monthly prices. Members of the House Committee on Banking and Currency were prepared to attach this measure to the RFC extension bill, deemed certain of passage, as a "rider." The RFC was later extended to June 30, 1947. Enactment of the new OPA extension law made this "rider" procedure unnecessary.

On August 1 Reconversion Director John Steelman announced that payments under the Plan will be retroactive to June 30, and that approved retroactive wage and salary increases recently granted by mine operators will be taken into consideration in the payment of premium prices for copper and lead. Steelman also issued a directive under which some operators



## Washington Highlights

**CONGRESS:** Adjourned August 2 to January 3, 1947.

**OPA:** President accepts revised bill.

**METALS:** RFC purchasing abroad at higher prices.

**COAL:** CMA moves to release mines.

**SILVER:** Murdock-Martin Act carries 90.5 cents.

**GOLD:** Producers cannot market abroad.

**STOCKPILING:** Law enacted and purchases begin.

**GWYNNE BILL:** Failed to pass.

**ATOMIC ENERGY:** Control law enacted.

**PUBLIC LANDS:** Bill would curb withdrawals.

**STREAM POLLUTION:** Bill may die.

**FREIGHT RATES:** Railroads would up 25 per cent.



who have not previously received premium payments, will become eligible for them as the result of reduced operating margins due to retroactive wage increases. The Quota Committee was instructed to revise quotas where changes in total income of mine operators justify such action, and positive quotas for July are to be revised to compensate for production lost by reduced operations and shutdowns during the time the Plan was suspended. Deficits in positive quotas which occurred during this period will not be carried forward.

In common with other commodities, maximum prices on coal were re-established at the levels effective on June 30. The mechanism for individual price adjustments remains the same as before.

## Metal Purchases

Recently the RFC has purchased approximately 40,000 tons of Chilean refined copper at 15½ cents f.o.b. Chilean ports. This is equivalent to 16½ cents a pound laid down in the Connecticut valley. The last previous

purchase, of 90,000 tons, was made at 11½ cents f.o.b. Chilean ports or the equivalent of 12½ cents in the valley. The new price is 2 cents above the current OPA ceiling price of 14½ cents for domestic copper.

Similarly, RFC has bought 22,500 tons of foreign lead at 9½ cents per pound c.i.f. United States ports. This compares with a previous purchase at 7.80 cents. The 9½ cents price is 1½ cents a pound above the present domestic ceiling price of 8½ cents set by OPA.

Clinton H. Crane, St. Joseph Lead Co., president, has urged Reconversion Director Steelman to increase the domestic ceiling price on lead to 9½ cents for the following reasons: (1) that sufficient quantities of secondary lead may again become available; (2) to lessen the wide gap between the U. S. ceiling price and the foreign market; (3) to lessen the use of lead in non-essential applications through setting a price that more correctly reflects its competitive position in our country's economy; (4) to develop the production of lead from a long-term point of view, which is not possible under a one-year subsidy plan; and (5) to unfreeze the heavy tonnage of lead that was made from concentrates and scrap purchased at the 9.50 cents price.

### Stockpiling Act

On July 23 the President signed the Thomas-May Strategic and Critical Materials Stockpiling Act which amends the original Act of 1939. In completing enactment of the stockpiling law the President criticized the application to stockpile purchases of the provisions of Title III of the Act of March 3, 1933, known as the Buy American Act. The President stated that, "The Buy American Act requires that only articles produced or manufactured from materials originating in the United States shall be purchased for public use. However, the Act also provides that exceptions to this rule may be made when Buy American purchases are determined 'to be inconsistent with the public interest or the cost to be unreasonable.' This provision clearly indicates that the stockpiling program should not be used as a means of generally subsidizing those domestic producers who otherwise could not compete successfully with other domestic or foreign producers. Furthermore, to insure that the necessary stockpiles are accumulated as rapidly as deemed advisable and with a minimum cost to the public, this Act should not be used as a device to give domestic interests an advantage over foreign producers of strategic materials greater than that provided by the tariff laws.

"It is the policy of this Government to work for international action to re-

duce trade barriers. We have proposed to other countries a set of principles governing trade, and look forward to the successful conclusion of broad international arrangements embodying the essential principles of these proposals. Pending the conclusion of such arrangements, it is the policy of this Government to avoid taking measures that will raise barriers to trade or prejudice the objectives of the forthcoming discussions. We are asking other countries to follow similar policies."

Initial purchases under the Stockpiling Act are now being carried out through the agency of the Army-Navy Munitions Board. Chairman of the Board is Richard D. Deupree with Undersecretary of War Kenneth C. Royall and Assistant Secretary of the Navy John Kennedy as the other members. Inquiries for proposed purchases will be issued by H. C. Maull, Strategic and Critical Materials Division, Procurement Division, Treasury Department, Washington 25, D. C. It is stated that purchases will be postponed on materials which are in short civilian supply, or else such items will be sought elsewhere where sufficient quantities are to be found.

### Coal Mines Administration

At the request of the Coal Mines Administrator, bituminous operators and miners have agreed to meet in Washington, September 10, for negotiation of a contract under which the Federal Government would return control of the mines to the owners. Admiral Ben Moreell, Administrator, has stated, "It is the desire of the Secretary of the Interior and of the Coal Mines Administrator to return the direction of the mines to their owners at the earliest practicable date. However, such return, which would involve a release from Government possession, will require an assurance of uninterrupted production. As you are aware, such assurance can only be achieved as the result of the negotiation of a contract between the Operators and the United Mine Workers of America."

Meanwhile the U. S. District Court of Appeals for the District of Columbia has denied an appeal by Jones and Laughlin Steel Corporation, for a temporary injunction in the dispute over the unionization of bituminous mine supervisory employees. This action follows the signing of a contract by the Coal Mines Administration on July 17 with the UMWA United Clerical, Technical and Supervisory Workers Union, applying to 136 supervisory employees at four western Pennsylvania bituminous mines of the Jones & Laughlin Steel Corp. The contract follows that signed by CMA on May 22 with the bituminous miners, but with a section binding the supervisors' union to initiate court action in the

case of Jones & Laughlin's refusal to bargain; in this manner, the National Labor Relations Board's position, that supervisory workers are an appropriate unit for collective bargaining, would be tested in the higher courts.

The CMA, as custodian of unionized bituminous mines, made effective July 29 a Federal Mine Safety Code. Inspectors of the U. S. Bureau of Mines are making periodic inspections and reporting all violations of the new safety standards to the Coal Mines Administrator. Operating managers of mines may appeal from inspectors' reports to the Coal Mines Administrator.

Interesting in connection with the Government bituminous coal wage agreement was the instruction issued to operating managers early in August to set aside 5 cents for every ton of coal produced, to be paid to the custodian of the Welfare and Retirement Fund established by the Krug-Lewis Agreement of May 29. The Paymaster General of the Navy is Custodian of the Fund and the First National Bank of the City of New York is the depository.

### Silver Act

Presidential approval of the Murdock-Martin Silver Act of July 31 brought victory to the silver producers and their able Senators and Representatives in Congress after a battle of many months. The measure provides for sales of Treasury silver at not less than 90.5 cents per ounce and reduces the seigniorage from 45 per cent to 30 per cent, resulting in payment by the Treasury of 90.5 cents per ounce to producers of domestic silver from ores mined subsequent to July 1, 1946. The Treasury has established 91 cents per ounce as its sale price for silver for manufacturing uses, and OPA has set a new maximum price for standard commercial bars of silver at 90.5 cents per ounce or the Treasury's selling price, whichever is higher.

Subsequent to the legislative situation discussed in our July issue, the House rejected and returned to the Senate the proposal for a price of 90.3 cents increasing to \$1.29 after two years, as contained in the Senate version of the rider to the Treasury-Post Office appropriation bill. The Senate then receded on the \$1.29 price and returned the bill to the House, insisting on the 90.3 cent sale and purchase price. Again the House refused and returned the measure to the Senate. Then came the record vote in the Senate, of 54 to 25, rejecting Senator Green's (Dem., R. I.) motion to concur in the House amendment authorizing the sale of silver at 71.11 cents. On this vote Senator Barkley, the Majority Leader, and

(Continued on page 58)



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# Personals

**E. E. Hunner**, formerly general manager in charge of ore mines for the M. A. Hanna Co., has become executive consultant. He will continue as senior representative of the M. A. Hanna Co., in the Lake Superior region and will direct matters of general policy. **Russell C. Fish**, formerly his assistant, succeeds Mr. Hunner as general manager with full responsibility for all of the company's iron ore mining operations not only in the Lake Superior region but in New York state and Missouri also. **G. M. Cannon**, formerly manager of mines in Michigan will become management consultant and **Richard W. Whitney**, formerly general superintendent of Minnesota operations, becomes general manager of all mining operations in Minnesota. **S. E. Quayle**, formerly Mr. Cannon's assistant, will become manager of Michigan iron ore mines.

**Paul M. Tyler**, formerly with the Bureau of Mines, returned from Europe last spring, where he was in



charge of metal and mineral technologic investigations for the U. S. Government in Germany. Upon completion of his reports, he terminated his long service with the Government and is now employed as executive officer, Massachusetts Institute of Technology Metallurgical Laboratory, Watertown Arsenal, Watertown, Mass.

**Robert L. Birtley**, president of the Hammond Coal Co., Girardville, Pa., has been elected by the nine members of the Anthracite Operators Negotiating Committee to represent the producers on the three-man board that is to administer the health and welfare fund provided for the miners in

the recently signed anthracite contract.

**Wayne A. McCurdy** has been named to the mining staff at Consol Mine 32 of the Consolidation Coal Company in West Virginia. Mr. McCurdy served in the U.S.N.R. as a lieutenant on the U.S.S. *Dennis* for three years in the Pacific theatre of war, immediately after receiving his engineering degree from West Virginia School of Mines.

**Dr. A. W. Schlechten**, head of the mining engineering department of Oregon State College, has resigned to accept the position of chairman of the Department of Metallurgy at the Missouri School of Mines, Rolla, Mo.

**Rudolph Ericson**, manager of the Davidson Ore Mines at Mineral Hills, Mich., has resigned from the management of this operation. Mr. Ericson has been associated with the Davidson Ore Mines since 1910; he had planned to resign at an earlier date but consented to remain on through the period of World War II emergencies as general superintendent. He will be replaced by **W. H. Looney**, who has been the company's mining engineer. **W. J. Collins**, who came to the property with Mr. Ericson, has been promoted to the position of plant manager.

**Gerald A. Eddy** has been appointed state geologist for Michigan. Mr. Eddy succeeds Dr. R. A. Smith who retired after more than 30 years spent in this position. Mr. Eddy is a native of Lansing, Mich., and a graduate of Michigan State College where he did post-graduate work in economic geology.

**Harry H. Angst**, superintendent of the New Cornelia operators of Phelps Dodge Corp., at Ajo, Ariz., has retired at the age of 65. Mr. Angst joined the Phelps Dodge Corporation in 1935 and was in charge at Ajo during the period of maximum expansion of New Cornelia operations. Prior to his association with the Phelps Dodge Corp., Angst was active on the Lake Superior iron range where he held operating and engineering positions with various firms operating on the Mesabi Range. Mr. and Mrs. Angst will make their residence in California.

**Norman C. Curtin** has been appointed supervisor of the field staff for the Anthracite Institute. Mr. Curtin has been the Rochester field representative for the Institute and Anthracite Industries since 1936. Prior to that time he was also connected with the Anthracite Industry for a number of years as engineer for Anthracite Service and with the sales department of Pattison & Bowns. Mr. Curtin will assist **M. R. Grover**, vice president of Anthracite Institute, directing the various phases of field activities.

**David W. Jones**, formerly a consulting engineer with Paul Weir in Chicago, Ill., has become president of the Simpson Creek Collieries. **James Guiney** is now general superintendent of operations; he was formerly connected with the Franklin County Coal Co. of Herrin, Ill. The new assistant general superintendent is **Irvin Scott** and **Sydney Smith** has become the new safety director.

**Howard M. McBride**, director of the insurance and compensation division of the employment office for Bunker Hill and Sullivan Mining and Concentrating Co. at Kellogg, Idaho, has retired after 46 years of service with the company.

**Frank Hamilton** has been elected vice president of Nicaro Nickel Company, subsidiary of Freeport Sulphur Company, Langbourne M. Williams, Jr., president, announced recently.



Mr. Hamilton, who has been assistant to the president, joined Freeport Sulphur Company in 1943. Prior to that he served in Washington on the staff of the War Production Board. He was previously associated with investment banking and financial consultant firms.

**Chief G. R. Spindler** of the West Virginia State Department of Mines has announced recent changes of mine inspectors in district four of northern West Virginia. **W. M. Berry**, formerly mine foreman at Industrial Collieries Carolina Mine, has been appointed to succeed **P. J. McGraw**, who has become inspector-at-large since the death of **Pete McLinden**.

**John C. Pierce**, mining engineer, who served during the war with the Manhattan Project at Oak Ridge, Tenn., assumed the position August 15 as executive secretary of the New



Mexico Miners and Prospectors Association, with his office at Albuquerque. The New Mexico Association, under an expanded budget, will broaden its activities under the direction of the new secretary.

**Carl Zapffe**, manager, Iron Ore Properties for the Northern Pacific Railway Co., has been appointed Community Chairman of the Committee for Economic Development, Brainerd, Minn., it was recently announced by Walter Fuller, president of the Curtis Publishing Company and chairman of the newly formed CED national information committee.

The retirement of Dr. George H. Ashley, chief of the Bureau of Topographic and Geologic Survey of Pennsylvania, as of August 31, at his own request, has been announced by Secretary of Internal Affairs William S. Livengood, Jr. At the same time Secretary Livengood announced the appointment of Dr. Ralph W. Stone, Dr. Ashley's assistant, to succeed Dr. Ashley from September 1 to December 31, when Dr. Stone, also will retire on age.

**Art J. Mosby**, of Missoula, Mont., secretary of the Western Montana Mine Owners & Operators Association and also owner of radio station KGVO, was chosen by the Navy as one of the radio reporters to view the atom bomb test which took place at Bikini.

**Robert Dahlin** has been promoted from maintenance superintendent to production manager of the Minds Coal Mining Co., Monterville, W. Va.

**C. R. & W. Engineering Co.** has succeeded the old-time firm of Corry & Morris, 22 West Granite Street, Butte. The new firm consists of Walter N. Campbell, Millard L. Reyner, and George D. Winans, and will carry on general engineering work and mineral surveying.

**Leigh B. Block** has been elected a director of Inland Steel Co., of Chicago to succeed J. H. Morris who has retired. Mr. Block, a vice president

of Inland Steel Co., is the grandson of one of the company founders.

**Northern Coal Mines**, subsidiary of Republic Steel Corporation at Uniontown, Pa., announces that James S. Neill, Jr., is appointed industrial engineer and Glenn E. DeRusha is elevated to the position of field engineer for the firm. James D. Frankenberry has also been appointed assistant property superintendent.

**Dr. R. S. Dean**, assistant director of the U. S. Bureau of Mines, has left government service to re-enter private business. He will continue professional work in Washington where he has commissions for research and development in electric-metallurgy and alloys.

The following coal executives were elected directors of the Controllers Institute of America: **John L. Auch**, vice president and comptroller of Pittsburgh Coal Company, re-elected by the Pittsburgh Control, and **John Pugsley**, controller of Tennessee Coal, Iron and Railroad Company, by the Birmingham Control. The Institute is a technical and professional organization devoted to the improvement of controllership procedure.

**M. N. Shaw**, formerly superintendent of the U. S. Vanadium Corporation's western tungsten division at Bishop, Calif., has been appointed chief metallurgist for U. S. Vanadium Corp., with headquarters at Henderson, Nev.

## —Obituaries—

**Lemuel C. White**, vice president of the St. Louis, Rocky Mountain & Pacific Coal Company at Raton, N. Mex., and one of the state's prominent mine operators, died late in July at Pueblo, Colo. Mr. White was one of the principal developers of New Mexico's coal mining industry and a director of the New Mexico Miners & Prospectors Association since its organization. He also had served as president of the Colorado-New Mexico Coal Operators Association. Mr. White was 68 years of age at the time of his death.

**Charles H. Segerstrom**, one of California's leading citizens and a man nationally known in mining circles, died on August 2 at the age of 66. In his early years Mr. Segerstrom had studied law and he was admitted to

Segerstrom was a director of the American Mining Congress. He was active on many programs and a frequent speaker at Mining Congress meetings. Aside from his mining activities Mr. Segerstrom owned hotels throughout California and had been Republican delegate to the National Convention from his state. In the death of Mr. Segerstrom the mining industry has lost an important personage and a good friend.

**Donald M. Rait**, chief of the mining section of the Reconstruction Finance Corp., died late in July in Washington, D. C., as result of a heart attack. A graduate of the University of Minnesota in mining engineering, the class of 1903, he later joined the engineering staff of Calumet & Arizona Mining Co. With C. & A. he rose to the position of superintendent of mines. Mr. Rait has been chief of the mining section of RFC since 1942.

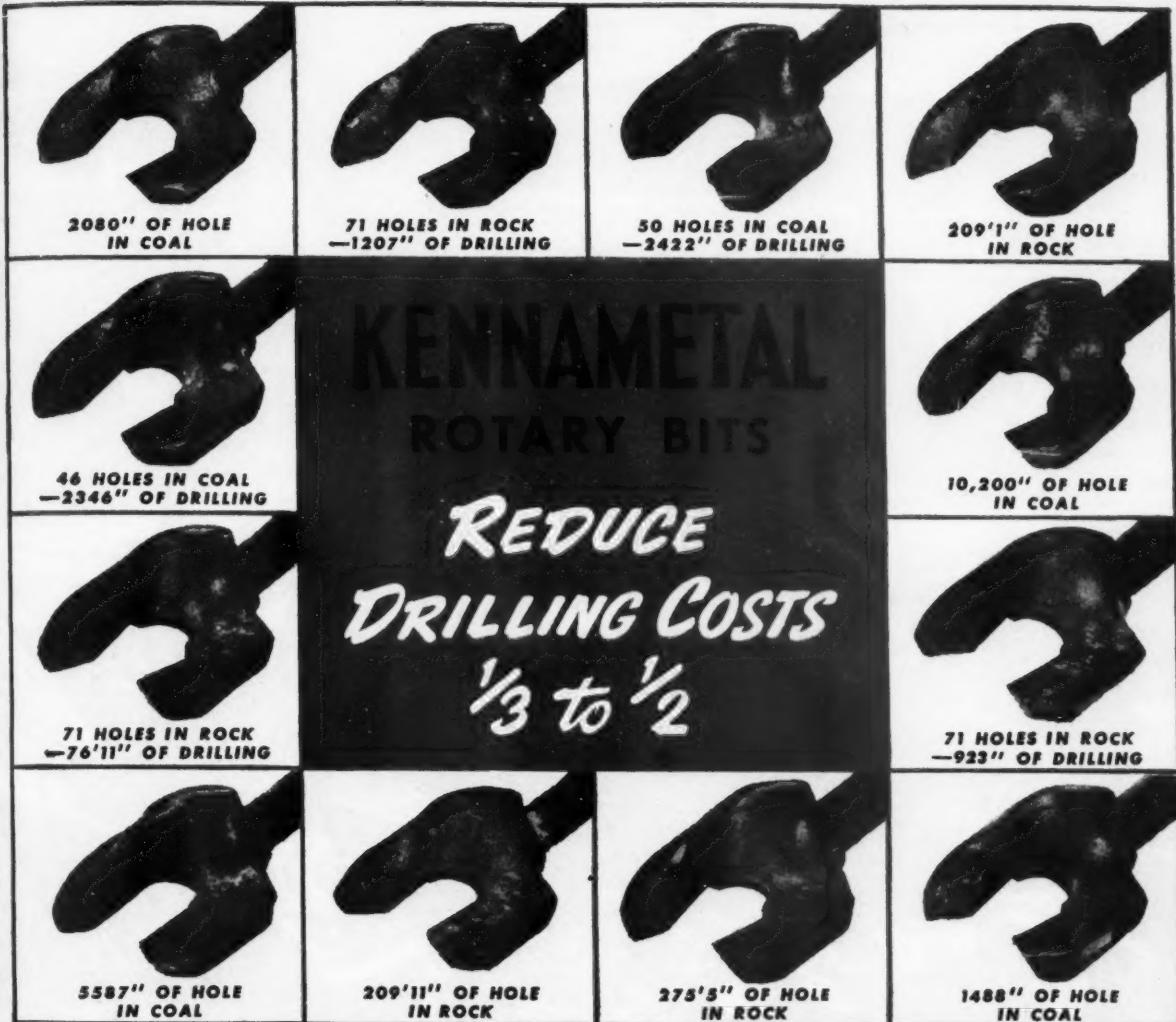
**Edward J. Maney**, general manager of the Shenango Furnace Co. and the Snyder Mining Co. at Duluth, Minn., died on July 20 of a heart attack at the age of 71. Mr. Maney was a director of the First and American National Bank of Duluth, chairman of the board of the Miller Hospital trust at Duluth as well as treasurer of the Lake Superior Industrial Bureau.



the bar in 1902. He became interested in gold mining in California prior to the last war and had been the director of many gold mining companies, the best known of which was the Carson Hill Gold Mining Co. Mr. Segerstrom's principal interest in metal mining was in the field of tungsten. He was president of the American Tungsten Producers Association and president of the Nevada-Massachusetts Co., one of the leading tungsten producers of the United States. For nine years Mr.

**Carroll Pattison**, retired coal operator, died recently at Bloomington, Garrett County, Maryland. Mr. Pattison had spent all of his life in George's Creek and was prominent among the coal operators of the region.

**John W. Mabbs**, president of the Mabbs Hydraulic Packing Co., died early in August. Although 87 years of age he was active up until two weeks before his death in the administration of the company.



THE Kennametal Bits shown drilled the footages noted before being resharpened. Many of them still do not need regrounding. All can be reground many times. Thus, total footage ultimately drilled with each bit is a score or more times the figure given. In fact, service results show that a single Kennametal Bit has drilled more than 30,000 feet of hole in coal—equivalent to approximately 9,000 holes, forty inches deep.

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LEADING THE WAY IN ELECTRIC SHOVEL DEVELOPMENTS

# NEWS and VIEWS

A giant electric dragline excavator, one of the largest in the world, is now working at the Maumee Collieries Corp., Terre Haute, Ind. It weighs close to 2,400,000 lbs., and is capable of moving a million cubic yds. of dirt per month, which would uncover 75,000 tons of coal for smaller electric shovels to scoop up.



## Eastern



## States

### Coal Mining Institute Hears Geologist



Herschel Ice, geologist of Monongahela Power Co., explained the importance of geology to the coal industry before the regular monthly meeting of the Central West Virginia Coal Mining Institute held early in August at Fairmont, W. Va. The speaker pointed out the importance of geologist's knowledge in locating coal seams. He indicated that although the man may not be called a geologist who locates them, he may be a mining engineer, prospector, or a miner of the school of hard knocks; nevertheless the knowledge he uses is geology. Ice also cited the steps to the discovery and recovery of oil, gas and other natural resources and how geology plays the major role.

Mr. G. R. Higinbotham, vice president of the Consolidation Coal Co., presided in the absence of President E. Frank Miller, general superintendent of the Koppers Federal Mine. The next meeting will be held Friday, September 13 at the Waldo Hotel in

Clarksburg, W. Va. Engineer Dan Walker of the U. S. Bureau of Mines will present a paper on "Safety in the Mines."

### Changes in Personnel Announced

The Consolidation Coal Co. at Fairmont, W. Va. has announced throughout the summer various changes in personnel some of which are as follows:

At Mine 25, Pinnickinnick, Gustav A. Schweinbraten was promoted from acting section foreman to section foreman.

At Mine 32, Owings, James A. Mazza resumed his duties as section foreman having vacated his position in 1942 to enter military service. Parker Davidson was appointed section foreman and in July, A. B. Price was appointed mine foreman, having been transferred from Mine 93, Jordan, where he had held the same position.

At Mine 63, Monongah, Nicholas Eates was appointed section foreman

and at Mine 93, Jordan, Samuel M. Phillips was appointed fire boss, having been transferred from Mine 63, Monongah, where he had held the same position. Marvin Y. Thorne was promoted from temporary assistant mine foreman to assistant mine foreman, and Harry Turner was promoted from section foreman to mine foreman. In July, W. O. Barnard, Jr., was appointed time study engineer.

### Company Moving Headquarters



The Pittsburgh Coal Company, operating unit for 18 coal mines of Pittsburgh Consolidation Coal in Pennsylvania, is moving its headquarters from the Oliver Building here to Library, 14 miles south of the city. The shipping department was the first unit to be transferred and the entire change will be accomplished by October.

The company said the change has been under consideration for more than a year with the objective of placing executives as near to the actual site of operations as was convenient. Pittsburgh Consolidation's headquarters remain in the Koppers Building.

### Plant Capacity to be Increased

St. Joseph Lead plans to spend \$3,700,000 to increase the output of high grade zinc oxide, by stepping up the plant capacity of electrothermic zinc smelting at Josephtown, Pa. The output will be increased from approximately 300 tons of concentrates a day to 500 tons. It is anticipated that this project will be completed by the end of 1947.

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## Corrosion in Stokers Discussed

Bituminous Coal Research, Inc., national research agency of the bituminous coal industry, is distributing its Technical Report No. IX, entitled "The Corrosion of Feed Screws of Small Underfeed Stokers." This booklet reports the results of an investigation made at Battelle Memorial Institute, Columbus, Ohio, under the joint sponsorship of BCR and the Calcium Chloride Association.

## Round Table Conferences To Feature Industrial Hygiene Meeting

The Industrial Hygiene Foundation will hold its general meeting at Mellon Institute in Pittsburgh on Thursday, November 7. As in past years the program will deal with broad subjects of interest to management respecting the well-being of men at work. A series of three or four round-table conferences will be arranged in connection with this meeting.

Subjects of more specialized interest will be discussed informally in conferences to be held November 6 and 8, the day before and the day after the general meeting. A conference for physicians from member companies and a conference for plant engineers are tentatively planned for November 6. There is also a possibility of a conference for chemists and toxicologists and another for attorneys and compensation men and these may be scheduled for November 8.

## Important Reorganization Takes Place



American Cyanamid Company, 30 Rockefeller Plaza, New York, recently announced that, effective July 31, 1946, the business of the American Cyanamid and Chemical Corporation, a subsidiary, will be consolidated with that of the parent company, American Cyanamid Com-

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ENGINEERING AND ECONOMIC SURVEYS, ANALYSES AND REPORTS ON POWER APPLICATIONS AND POWER COST PROBLEMS OF THE COAL MINING INDUSTRY

Oliver Building Pittsburgh, Pa.

pany. This consolidation action is in line with the general plan for the simplification of the corporate structure of the Cyanamid organization, the announcement continued, and henceforth the business of the American Cyanamid and Chemical Corporation will be operated as the Industrial Chemicals Division of American Cyanamid Company.

As the Industrial Chemicals Division of American Cyanamid Company, it will handle the sale of insecticides, gypsum products, prussiates, sodium phosphates, case hardeners, rubber accelerators, a full line of industrial explosives including dynamite, blasting powders and electric blasting caps, nitrocellulose for coatings and finishes, phthalic anhydride as a base for vat dyes and as an important constituent of synthetic resins, which are revitalizing the paint, lacquer, varnish and enamel industries. It is also a large distributor of chemical specialties serving particularly the rubber, textile and leather industries.

A similar consolidation is planned with regard to Lederle Laboratories, Inc., Pearl River, N. Y., the Cyanamid unit which produces pharmaceutical and biological products for human and veterinary use. This consolidation is expected to become effective in the near future.

## Strike Called Off

The strike which has tied up the operations of New Jersey Zinc Co.'s Franklin and Ogdensburg mines was called off on August 19 by the District 50 Mine Workers' Union. The workers will receive an increase of 18½ cents an hour in wages (which had been available to them right along), but their demand for a closed shop was dropped.

## Coal Stripping Active

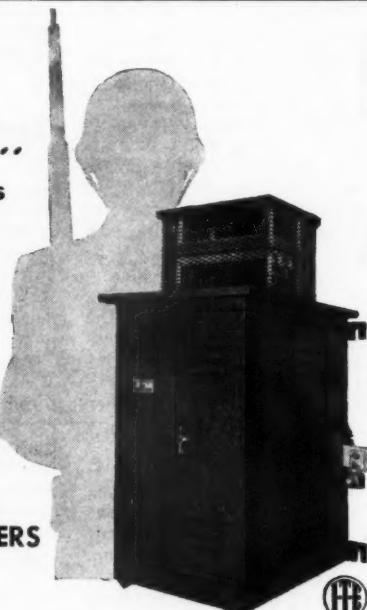


Throughout the summer there has been new coal stripping work underway in the various portions of the state. The Sherman interests had bulldozers engaged in removing the overburden on Centennial Hill near where Walbert & Company had been mining the Tyson coal seam by underground workings. The Sherman interests also had steam shovels and bulldozers operating on the Trimble farm near Mt. Savage, removing the overburden from the Freeport seam.

The Consolidated Fuel Company and its associates were stripping Big Vein Coal by means of bulldozers near Vale Summit, Allegany County. This coal

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is transported by trucks to No. 10 tipple at Eckhart Mines and loaded into railroad cars. One of the sights at this operation near Vale Summit was the bulldozers and the power shovels employed to load the coal into trucks, working a hundred feet of where the smoking wild coal was visible over the Big Vein.

Mr. McNutt, of Uniontown, Pa., is removing the overburden from the Big Vein seam on the Rephann land northeast of Eckhart.

The Hazelwood interests are stripping the Big Vein on Phoenix Hill above the station known as Lawder near Barton, Allegany County.

### Phosphate Mining Plant Purchased



Davison Chemical Corporation has purchased the mining properties of the Southern Phosphate Corporation, Bartlow, Fla. The properties will be operated as the Phosphate Rock Division of Davison. The purchasing price was given as \$3,600,000.

In announcing acquisition of the Southern Phosphate properties, Mr. Chester F. Hockley, president of Davison Chemical Corp., emphasized that the present operating personnel of the corporation would be retained.

Florida deposits are particularly well suited to the application of mass production methods. According to a statement issued by the Davison Corporation surface mining of Florida phosphate rock is done by a combination of electric dragline excavators and hydraulic mining. The new phosphate rock division will furnish phosphate rock to the Davison Corporation's several plants. This will place the company in a very advantageous position in the fertilizer and chemical industry as they will supply their own phosphate requirements in addition to being able to supply tonnage of essential phosphate for industry and agriculture at home and abroad. William H. Gabeler, formerly general superintendent of Davison's Curtis Bay works and more recently a member of the engineering and process division, has been appointed manager of the phosphate-rock division with headquarters in Baltimore, Md.

### Large Scale Development Projected in Coal Fields



The Walter A. Bledsoe Coal Company, of Terre Haute, Ind., with John Marshall and associates of Scranton, Pa., which operates under the name of Greenwood Mining Co., will develop the Deep

River coal field located eight miles from Sanford. R. Bruce Etheridge, director of the North Carolina Department of Conservation and Development, recently announced this new project.

The major portion of the proven Deep River field has been acquired either by outright purchase or lease by the Bledsoe Co., which is the third largest coal producing organization in the United States. It is expected that very shortly 500 tons of coal a day will be produced from the Old Carolina Slope, which is located in the heart of the field.

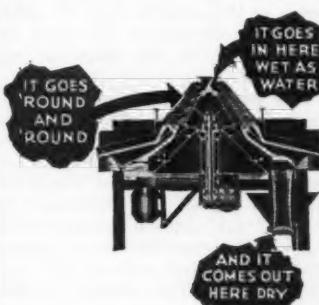
In 1943 a special survey of the coal field was made by the H. A. Brassert Co. and C. C. Morfit, of New York, coal consulting engineers. They filed a report showing the Deep River field had an indicated reserve tonnage of 46,000,000 tons of coal. Since that time, core drilling tests by the U. S. Bureau of Mines and the Bledsoe Co., participated in by the N. C. Division of Mineral Resources, confirmed these estimates and indicated even greater reserves. The Deep River coal deposits has been mined intermittently and largely unsuccessfully since before the American Revolution. The Brassert report says the coal has good coking properties, is suitable for domestic and other fuels uses, and that a "relatively large number of by-products" can be recovered. The coal occurs in two seams, sandwiching a layer known locally in the Sanford area as "black band." The black band is largely composed of iron carbonate and phosphorus. Combustion engineers report that with proper separation the Deep River coal makes an excellent fuel suitable for most usages, and the Brassert report confirms this.

### Geological Bulletin Available



Considerable field work has been done in investigating Georgia's mineral resources. Investigations have been made of the state's bauxite and kaolin deposits and recently as part of this program there has been published Bulletin No. 50 Part I, entitled "Geology of the Coastal Plain of East-Central Georgia." This bulletin was published by the Georgia State Division of Conservation, Department of Mines, Mining and Geology, Garland Peyton, director. Philip E. La Moreaux, geologist, United States Geological Survey, is the author of the bulletin which was prepared in cooperation with the United States Department of Interior, Geological Survey, Washington, D. C. Ground water investigations are being made in cooperation between the two services and much time has been spent in remapping the coastal plain areas.

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## Wheels of Government

(Continued from page 48)

Senator Taft, of Ohio, supported the position of the Senators from the metal mining states.

While Senate and House conferees remained deadlocked on the Treasury-Post Office silver "rider", Senator Carl Hayden of Arizona on July 13 called up the Murdock-Martin bill which the Senate Committee on Banking and Currency had reported, carrying a sale and purchase price of 90.3 cents increasing to a \$1.29 after two years. At Hayden's suggestion the Senate struck out the Murdock provisions and substituted the Martin bill which the House had passed last December 19, but with a sale price for treasury silver of not less than 90.5 cents instead of 71.11 cents, and without the two-year limitation. The substitution also provided for the seigniorage reduction from 45 per cent to 30 per cent, resulting in payment of 90.5 cents per ounce to producers on silver from ores mined subsequent to July 1, 1946.

As a result of this action on Senator Hayden's recommendation, the silver rider was dropped from the Treasury-Post Office bill and the Murdock-Martin bill approved by the House and sent to the White House.

### Gold

Despite the efforts of Representative Clair Engle of California to get action on his gold mine relief bill the measure remained in the War Claims Committee when the Congress adjourned. The bill would have compensated mine owners for out-of-pocket losses suffered due to the WPB shut down order, L-208.

A request addressed to the Treasury by Robert M. Searls, attorney for California gold operators and James F. Snell, attorney for the Nevada County (California) Mine Workers Protective League, to market newly-mined gold abroad, has been turned down. The California producers suggested that "suitable arrangements could be made with American importers to supply foreign exchange necessary to enable them to pay for goods purchased in the countries to which bullion might be shipped, at standard rates of exchange, and the gold miner would then get the price of his bullion back in the form of dollars through this medium." This procedure would of course require the issuance of export licenses by the Treasury.

The Treasury's letter of reply to the producers included the statement that: "Apart from whether the proposed transaction would be, as a technical matter, legally permissible, such transaction would be detrimental to the economy of the foreign governments

involved and would be contrary to the international, financial, and economic policy of the United States. Since all normal needs of any foreign country for gold can be filled under existing licenses or in any event at \$35 an ounce, purchases beyond these needs at a higher price are not likely to be in the interest of the foreign country, and would, furthermore, diminish the ability of such country to pay for necessary imports from the United States and elsewhere."

### Gwynne Bill

The Congressional adjournment left the Gwynne bill, H. R. 2788, limiting suits for back pay and "liquidated damages" under the Wage-Hour Act, on the House Calendar. The Senate passed the measure July 25 with the time limitation changed to three years and with the terms of the bill directed only to the Wage-Hour Act and the Walsh-Healey Public Contracts Act. Still in the bill is the paragraph which reads: "No liability under subsection (b) shall be predicated in any case on any act done or omitted in good faith in accord with any regulation, order, or administrative interpretation or practice, notwithstanding that such regulation, order, interpretation, or practice may, after such act or omission, be amended, rescinded, or be determined by judicial authority to be invalid or of no legal effect."

As the bill reached the House in the last days of the session, there was every reason to believe that it would be approved and would go to the White House. The Committee on Rules granted a rule to agree to the Senate amendments but when Representative Sam Hobbs of Alabama endeavored to bring the bill up under unanimous consent procedure, objection was made by several members from heavy labor constituencies and consideration was blocked.

Although the House Committee on Labor reported a minimum wage bill carrying an increase from the present 40 cents to 65 cents an hour, the threat of the addition of the Pace (Dem., Ga.) farm parity amendment, which would have brought a White House veto, made House leaders wary of the measure. The same situation prevailed with respect to the Pepper bill passed by the Senate in April carrying a 65-cent minimum. Both bills are probably dead.

### Public Lands

Chief interest in public lands legislation in the recent session is posed by the bill introduced by Senators McCarran of Nevada and Murdock of Utah, through which Congress would recapture from the executive branch of the government the power to make

withdrawals of the public lands from settlement, entry, location, and sale. This measure will be reintroduced in the 80th Congress. It would terminate "temporary" withdrawals from public lands after two years, unless Congress authorizes their continuance, and requires that public hearings shall be held on proposed withdrawals within the boundaries of the state or states concerned. Under the terms of this proposed amendment to the General Withdrawal Act of June 25, 1910 (35 Stat. 847), the Secretary of Interior would submit to Congress a full report on all outstanding public-land withdrawals, except those included in national forests, national parks, and other projects and reservations authorized by statute. Thereafter reported withdrawals, or portions thereof, whose continuance the Congress does not authorize within two years, would terminate.

The authors state in their explanation of the bill that many of the most valuable and most highly mineralized areas in the nation have been tightly locked up indefinitely from all productive development, and that these lands include some of the richest known deposits of minerals in short supply and badly needed in the interest of the national economy.

### Freight Rates

Following the temporary freight rate increases discussed in our last issue, the I.C.C. has been conducting hearings on the request of the railroads for an average increase of 25 per cent. Witnesses for the mining industry have appeared at Buffalo, Chicago, and Salt Lake City.

Secretary Julian D. Conover of the American Mining Congress at Buffalo, on August 5, opposed increased rates on ores and concentrates. In his testimony he explained to the Commission how freight rates materially influence mine operation and development as an important item of cost. He stressed the point that there are millions of tons of ore which are so close to the margin of economic production that a few cents of additional cost would change these ores into waste rock. The Commission was told that if reasonable freight rates were maintained on ores and concentrates, "not only the movement of the ores and concentrates themselves but also the subsequent movements of smelter products to refineries, of metals, from smelters and refineries to manufacturers, and of manufactured products to consumers and distributors will yield the carriers attractive revenue; but if the rock must be left in the ground because of excessive freight rates on the ores and concentrates, the revenue from all these movements will fail to materialize."

# Central



# States

## Leases Acquired at Baxter Springs

The Muncie and Early Bird leases have been taken over by Bilharz Mining Co., from the Federal Mining and Smelting Co., as recently announced by O. W. Bilharz, of Baxter Springs.

These leases are located a mile northwest of Trece and comprise a total of 210 acres. The Federal Company is also renting mining equipment and machinery that is on the property. The old Muncie mill shaft will be reopened and ore will be trucked to the Youngman mill, about three-quarters of a mile to the southwest. Bilharz plans later on to reopen the old Federal on No. 2 shaft on the Muncie and plans to use the Federal derrick and hopper from the old Big Elk mine to pull dirt from the Early Bird to the No. 2 site.

## Zinc Ore Shipments to Start Soon

Ore shipments are expected to start shortly from the Excelsior zinc mill near St. Joe, Ark. Tom Grimmett, of Oklahoma, is engaging workers to open up new ore veins. Work at the property is under the supervision of J. C. Shepherd.

## Coal Utilization Program Released

H. L. Walker, chairman of the University of Illinois seventh conference on the utilization of coal, has released the program for the eight sessions to be held at Urbana, September 17, 18, and 19. Smoke prevention, problem of heating new homes, mechanizing coal deliveries, coal storage facilities and what architects and builders should know about coal bins, are included among subjects for discussion during the three-day program. The conference is the first since 1941, when enrollment included representatives of 20 states. Cooperating with the university in sponsoring the conference are: The Illinois Society of Coal Preparation Engineers and Chemists, Illinois Mining Institute, Illinois Fuel Merchants Association, the Chicago Section of the American Institute of Mining and Metallurgical Engineers, Illinois Coal Operators Association, Chicago Wholesale Shippers Association, and the St. Louis Coal Merchants Association.

## "Old King Coal Victory Cavalcade"

At West Frankfort, Ill., on October 3rd through the 5th, the Coal Cavalcade, a festival occasion which has attained considerable prominence, will take place. Educational features of the Cavalcade will include a vast array of modern coal mining machinery and equipment exhibited by manufacturers and a reproduction of a coal mine set up and in operation. A coal tree, from the branches of which will hang the many by-products of coal, ranging from nylons to aspirins—and many other interesting and educational attractions designed for the promotion of the coal industry—will serve as part of the display. The three-day celebration will be climaxed by a night parade led by the oldest coal miner in Illinois who will be crowned as King Coal.

## Motion Picture to Show Ohio's Minerals



Arrangements are being worked out for the production of a 40-minute motion picture showing the mineral resources of Ohio as well as its scenic beauty. The various state agencies in cooperation with the U. S. Bureau of Mines will produce the movie which is estimated to cost between \$35,000 and \$50,000. Dr. George White, state geologist, is working on a map of the state which shows the locations of the various mineral deposits, the industries that developed from them and the manufacturers that utilize their products.

## Coal Burning Home Boiler Demonstrated

"Uncle Joe" Harrington, known to stationary engineers everywhere as the designer of the Harrington stoker, recently displayed in Cleveland at the National Association of Power Engineers' exhibition, a new coal-burning home boiler.

For the last six years Harrington has been developing and testing this small smokeless boiler. It embraces the basic principles of big central station boilers which sometimes attain an efficiency claimed at 85 per cent. His small boiler has developed 80 per cent efficiency in tests, some-

thing "unheard of in small boilers," he says.

Mr. Harrington described the boiler as "the first miniature, overfeed, progressive combustion, continuous ash discharge stoker." It is claimed that the boiler will handle any solid fuel—even the cheapest—that is under 2 in. in diameter. Harrington states that the boiler is smokeless and the secret of its success is that of adding the fuel in very small increments. Mr. Harrington designed and installed a great deal of power plant equipment in use throughout the country and "retired" 10 years ago to become consulting engineer for the Illinois Coal Corp. and other Illinois mines. "Uncle Joe" is now 73 years of age, but it appears as though his retirement is more theoretical than actual.

## New Resident Center for College



The historic Fort Brady at Sault Ste. Marie is being transformed into a resident center for the Michigan College of Mining & Technology. At this branch, as well as at Houghton, the college plans to offer its own first-year work. It will also give terminal courses—short, intensive courses not comprising part of a bachelor's degree. At the col-

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This Sauerman system, operated by one man, is handling a storage pile 35 ft. high covering 105,000 sq. ft. of ground. Moving material to or from any point in the area, scraper handles an average of 100 tons an hour at a cost of about 3c a ton.

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lege's invitation the University of Michigan is considering supplementing the college's staff so that a first-year curriculum in liberal arts as well as engineering and science will be available at the center. Housing facilities and food services will be furnished on the campus, and the college will make available the physical training, intramural sports, student health, counseling, and similar services provided at Houghton. This new branch will be under the supervision of Extension Director F. L. Partlo and the resident director will be Professor H. W. Risteen. Students at this time will be mainly war veterans.

### No. 2 Shaft Reopened at Calumet & Hecla

The Seneca No. 2 shaft of the Calumet & Hecla Consolidated Copper Co. in Keweenaw County, Michigan, is being reopened. This mine was formerly operated by the Seneca Copper Corp., which property was purchased by Calumet & Hecla in 1945. Machinery is being transferred from other mines of the company located in the district and a new engine house will serve the shaft. The Seneca shaft is now known as the Gratiot shaft.

### Low Grade Iron Reserves Great

In the Crystal Falls-Alpha iron-bearing district, a potential reserve of a billion tons of low-grade open-pit ore is indicated by a survey at the present being conducted by the Federal and state geologists in the district. It is anticipated that further research may make these ores available for mining purposes. A brief paper by F. J. Pettijohn, a member of the survey staff and a University of Chicago geologist, indicate that these deposits are very extensive.

The report is compiled on a re-study of all known outcrops and exploration data furnished by the mining companies with detailed mapping by magnetic dip needle and the Hotchkiss Superdip. The ore is mainly hematite of non-Bessemer grade. A new map is furnished with the report and this should facilitate search for high-grade ores, inasmuch as concealment of iron-bearing formation beneath a thick cover of glacial drift



made earlier exploration difficult and expensive. Most of the formation mapped is low-grade, cherty iron carbonate which is a potential iron ore reserve if the problems of reduction and beneficiation are solved, and if market conditions permit profitable extraction.

The iron-ore formation and associated strata are shown on Preliminary Map 3-181 of the strategic minerals investigation series, entitled "Geology of the Crystal Falls-Alpha iron-bearing district, Iron County, Michigan." Copies of this map and the accompanying paper may be procured from

the Director of the Geological Survey, Washington 25, D. C.

### Staff Increased at Research Laboratories

The Oliver Iron Mining Company's new research laboratory at West Duluth has been increased by the addition of four metallurgists and research technicians. This laboratory is under the direction of Walter L. Maxson, research head for the Oliver Iron Mining Co. Milton F.



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Williams, Jr., has been named associate chemical engineer; Robert L. Bennett, associate concentrating engineer; Stephen F. Wiley, assistant concentrating engineer, and Oliver B. Cole, laboratory assistant. LeRoy Salsich, president of the company, has stated that it will be several months before the laboratory will be in full operation due to delays in equipment delivery. The company is engaged in a long-range program of experiments directed towards conserving natural resources through greater uses of all grades of iron ore.

## Successful Coal Operation Continuing



The Truax-Traer Coal Company reports that the new Dakota Star Mine near Hazen, N. Dak., was in full production during practically all of this past year. Operations at the underground mine at Wilton, N. Dak., were discontinued due to excessive production costs but a new strip mine to serve this market area, which includes the Washburn power plant of the Ottertail Power Company, is now under construction at Garrison, N. Dak., a few miles north of the Wilton mine. The necessary coal reserves have been acquired for this new operation. The new Dakota Star Mine operates on high quality of lignite coal and a modern mining community has been established at Truax, N. Dak.

## Forty-second Annual Report Published



The 1944 annual report of the inspector of mines for the state of South Dakota has just been published. This report, written by Francis Church Lincoln, inspector of mines, Lead, S. Dak., embraces statistics on mineral productions of the state in 1944 and lists the various mines and the names of all the leading officials connected with the companies.

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## New Laboratory for Allis-Chalmers



Improved testing and laboratory facilities for a variety of its industrial and marine products have been announced in recent months by the Allis-Chalmers Mfg. Co., Milwaukee, Wis. Among these are a new "shock-test" laboratory developed in cooperation with the Navy during the war, a new electronic processing laboratory and a new steam turbine auxiliary test floor.

The "shock-test" laboratory is available to the company's engineering

staffs for testing materials and devices likely to be subjected to extremely harsh treatment in service. It is equipped to handle high-impact shock, vibrating, humidity and temperature, salt spray, and electrical and mechanical life tests. The shock tests consist of subjecting the product to difficult mounting positions in a special high-impact shock machine capable of handling devices up to 4,500 lbs. and having a shock blow capacity of 18,000 ft.-lbs. By giving the shock in various directions, subsequent visual inspection and operating devices provide positive evidence of the strength of the product being tested.



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A new, heavier, chemically-treated moist-proof bag—the SUPERSEAL-TITE bag is now available as well as the regular SEAL-TITE bags. The "SUPER" bag allows for longer underground storage of bags, filled or unfilled, without breakage of the paper from damp or wet conditions.

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# *A Thumb Nail Sketch*

## The Birth and Development of the Idaho Mining Association And Some Past History of Its Relationship with The American Mining Congress



By IRVIN E. ROCKWELL  
Bellevue, Idaho

THE first meeting of Idaho's prospectors and operators was held in the offices of Richards & Haga at Boise, Idaho, early in the summer of 1903. The occasion for the gathering was an urgent invitation from the governor of Missouri to Governor Frank R. Gooding, of Idaho, that the state furnish a display of its mineral products at the forthcoming International Exposition to be held in St. Louis in 1904.

Judge J. H. Richards was elected as chairman of the assembly. Judge Richards was personal counsel to the governor and was busy on his own, nursing a couple of lead-silver prospects. Amongst those who attended the meeting were Robert N. Bell, for 18 years Idaho State Mine Inspector; Major Fred R. Reed; J. B. Eldredge; Ned Hasbrouck, and Irvin E. Rockwell. Contemporaneous with this meeting Frederick Burbidge of Wallace, later manager of Federal Mining and Smelting Company appeared in town between trains and was commandeered as president of the new organization, which is now named "Idaho Mining Association." Mr. Eldredge was elected vice president and chairman of the executive committee while Mr. Hasbrouck was appointed secretary and treasurer.

The writer was elected as a subcommittee to assemble the St. Louis Exhibit. A car load of mixed ores, largely contributed by the Coeur d'Alene district, with the Bunker Hill and Sullivan then under the management of Stanley Easton, furnishing

most of the specimen materials. This was supplemented by a single nugget of lead-silver from the Minnie Moore Mine, then in full production through a recapture of its faulted ore body under the management of Rockwell. The nugget weighed 3,100 pounds, with a metal content of 124 ozs. of silver and \$2.50 in gold and 74 per cent lead.

Within the year, State Senator Ravenel Macbeth of Mackay, sponsored and supported by the Day brothers, assumed leadership of the group. Macbeth traveled the state and attracted membership from all mining districts.

During state legislative sessions at Boise the Idaho Mining Association met biennially and served in an advisory capacity. During the year 1913, owing to the impact of a near economic crisis confronting the industry, it moved to meet early in the year at the state capital, and over 200 members gathered at the Boise Commercial Club Auditorium to ratify incorporation of the Association and hold its first meeting as a legal entity.

Mr. Burbidge, who had nominally headed the organization for nearly 10 years, was succeeded by the election of Harry L. Day as president. The former five-man executive board was elected, together with Senator Macbeth as secretary and treasurer, a position which he held full time until his death in 1928. He was succeeded by James W. Gwinn, formerly operating engineer with the Bunker Hill and Sullivan Mining and Concentrating Co., who also served until his death in December, 1941, to be succeeded in turn by incumbent Harry W. Marsh who had graduated with "Jim" Gwinn from Idaho State University in mining engineering.

Ten presidents have served the Association since 1913:

*Harry L. Day.....	1913-1914
*James F. McCarthy.....	1915-1916
Stanley A. Easton.....	1917-1918
*Jerome J. Day.....	1919-1922
*Charles W. Newton.....	1923-1925
Frederick Burbidge.....	1926-1927
L. E. Hanley.....	1928-1929
Stanley A. Easton.....	1930-1936
Irvin E. Rockwell.....	1937-1940
A. H. Burroughs.....	1941-July 1, 1945
John D. Bradley.....	1945

\* Deceased.

Of the original executive board one member is living—the author of this sketch. He served on the board continuously for 37 years, retiring contemporaneously with the end of his term as president, from 1937 to 1940.

It is interesting to note that the birth of the American Mining Congress was substantially contemporaneous with that of the Idaho Mining Association. Some 47 years ago the International Mining Congress was organized in Denver and at Portland, Oreg., in 1902, the name of the organization was changed to the American Mining Congress. The first annual meeting of the new organization was held at Lead, S. Dak., on September 7, 1903. Judge Richards presided at this gathering and was elected the first president at that time. Through the active cooperation of George Dern, Sr., whose son later became Secretary of War, the Utah delegation was well represented. Known as the "Grand Old Man of the Utah Mining Industry," and a mining engineer of great ability, George Dern brought to the organization his enthusiastic support.

Judge Richards was president of the American Mining Congress for seven terms, from 1903 to 1910. No other achievement in his long life as lawyer and judge, gave him as much pride and pleasure as this position of leadership among the mining giants of those early days. Under Judge Richard's leadership the author became the first life member of the American Mining Congress. Less than a baker's dozen of the original group are left today.



## Western

## States



### Treasure Mountain Continuing Developments

The Sandigo tunnel on Treasure Mountain, above Eureka, in San Juan County, is being driven another 500 ft. by Cochran Bros., who are contractors for this work. The additional footage should cut the Scotia and Golden Fleeces gold veins at 700-ft. depth, producers of high grade in the early history of the San Juan district. The property consists of 32 patented claims and is owned by the Treasure Mountain Gold Mining Co., with offices in the Midland Savings Bldg., Denver. The development work is under the direction of E. R. Abadie, mining engineer.

### Placer Being Tested Near Leadville

At the moment, test holes are being put down at a rate of more than one per day on a property about 12 miles south of Leadville. The Hallenback-Williams placer, which has produced considerable gold in the past, is under option to Goldfield Cons. Mines Co. of San Francisco. Two shifts comprising 10-12 men are working on the property. Operations started on June 1 and two drills were used for a while but proved unsatisfactory and early in August only a single gasoline-driven Keystone churn drill was in operation. This test work is under the supervision of E. E. Malliot.

### Trona Mine to be Opened

Construction of the 1,500-ft. shaft which will be the first step in the opening of the Trona Mine of the Westvaco Chlorine Products Co., will soon be under way. The Morrison-Knudsen Co., which has contracts for the shaft and head works construction, has opened offices at Green River and is preparing to break ground. The Union Pacific Railroad has almost completed construction of a railway spur three-quarters of a mile from Marston, nearest rail point to the mine site.

### Five-Ton Jade Nugget Found

A piece of jade that weighs an estimated five tons, believed to be the largest yet found in the Sweetwater

jade area not far from Lander, Wyo., has been on display at Lander. The material is a dark green color. It is owned by Wm. Mirion, Lloyd Curtis, and Marshall Graham. This unusual find has attracted a great deal of interest in the Lander region.

### Potash Ores Sought Near Moab

The Great Lakes Carbon Corp., is planning a test well to be drilled on the Seven Mile structure 10 miles west of Moab on Highway 160, where a rotary derrick has been erected for the past year. The well will be cored to a depth of around 3,500 ft. to check potash and magnesium beds which are known to underlie the structure. A previous well that had been sunk in the same area some years ago showed rich values of carnallite and sylvite.

### Favorable Report from New Park Mining

The statement of the New Park Mining Co., of Keetley, for the first half of 1946 revealed that this period has been the most profitable in the country's history. The net income for

the first half year was \$408,214 derived from ore sales totaling \$661,639.

### Exploration Under Way on Copper Property

 Geological mapping of the Mill Creek Copper Company property at Mountain City, Nev., was recently completed by Prof. Paul C. Henshaw, Idaho School of Mines. This property is adjacent to Mountain City Copper Company's Rio Tinto mine.

Location of the mineralized zone of a 37-ft. gossan vein crosscut on the 380-ft. level, is the object of the survey, it was explained by D. E. Smith, Logan, Utah, president of the company. Report of the survey from Prof. Henshaw is expected by September 1.

R. S. McClintock, Spokane, Wash., has contracted the drilling work, and the extensive diamond drilling program is under way on the property. Drilling is being done both from the surface and from the 380-ft. level.

Development of this property has been progressing since 1941 and the company has extended the shaft to 565 ft. where a crosscut was made to intercept this vein in the sulphide zone. The lower portion of the vein appears to have been misplaced by a low-angle fault.

H. C. Gorby, Pocatello, Idaho, is general manager of the company and Clyde R. Durnell, New Mexico, is engineer in charge of operations at Mountain City.

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## Title Secured to Important Copper Deposit

The Anaconda Copper Mining Co. has acquired all the interests in the Yerington copper property in Lyon County, including the Guild-Adams-Herrin claims, where exploratory work has indicated approximately 50 million tons of ore having a copper content of 1.02 per cent, according to the company's annual report. This is said to be among the largest known copper deposits in the region.

## New Bulletin Issued by Nevada Bureau of Mines

"Tungsten Deposits of the Osgood Range, Humboldt County, Nevada," by S. W. Hobbs and S. E. Clabaugh, geologists of the U. S. Geological Survey, is the title of the bulletin that has just been published by the Nevada Bureau of Mines and the Mackay School of Mines. This bulletin describes the tungsten deposits of the Potosi Mining District, now usually referred to as the Getchell Mining District, noted as one of the outstanding producers of tungsten during the late war. After describing each property, an estimate of the tungsten ore reserves is given, totaling over 800,000 tons and containing over 500,000 units of tungsten trioxide, thus assuring a long life to the district. Eleven maps of the property are included in the bulletin and represents many months of combined survey work and geological study.

## Operations Back on 40-Hour Week

 For the first time since before the war, Grant County major mining companies have gone on a 40-hour week. Headed by the Chino Mines Division, Kennecott Copper Corporation, these mines during the war produced copper, zinc, lead, iron, and manganese, and operated on three shifts around the clock setting an all-time high production record.

## Placer Mining Revival

According to C. C. Royall, of Silver City, a Los Angeles syndicate has secured lease on extensive claims and plans to start dredging operations on a major scale in the White Signal District, 25 miles south of Silver City in the Burro Mountains. Profitable placer mining was carried on many years ago in Grand County at Pinos Altos in the Bear Creek placers and the area still makes a good day's wage for miners. This new placer district

is in the same general region as the old workings and there is known to be considerable gold available.

## 50-Ton Mill Operating on Complex Ores



Silver Butte Mine, located 42 miles south of Libby, Lincoln County, is operating a 50-ton mill concentrating a complex zinc-lead-silver-gold ores. This property was operated many years ago by the Kentucky-Vermillion Mining Co. William Curtis, Malta, Mont., is the principal owner, and Ivor Anderson is in charge of operations at the mine. Andrew Prader, of Spokane, Wash., is consulting engineer.

## Old Mine Dewatered

The Elkhorn Mining Co., Elkhorn, Jefferson County, has dewatered to a 450-ft. level of the old workings. This has drained new operations which are located 225 ft. in the footwall territory of the original Elkhorn incline. Wade V. Lewis, manager, states: "We are now down vertically about 130 ft. and have a full floor of lead-silver-zinc ore."

## Shaft Sinking Under Way



The Thomas Mines Company whose property adjoins the Dayrock Mine in Nine Mile Canyon near Wallace, Idaho, is undertaking important development work. The first portion of this program will be the sinking of a shaft to a depth of 200 ft. Preliminary prospecting on this property has revealed a vein of lead-silver ore similar in character to that on the adjoining Dayrock Mine which has developed a major sized body of exceptionally rich silver-lead ore on deep levels. E. G. Gnaedinger is engineer in charge and six or eight men are employed grading a road with a bulldozer and preparing a building foundation for a new air compressor and hoisting plant.

## Development Starts on New Hilarity

New Hilarity company officials have announced that development work has started on the Paramount and Yreka properties in the Coeur d'Alene district. Work has commenced on air compressor plant and a contract has been let to drive 500 ft. of tunnel, which work is already under way. This development is expected to open a silver-bearing system exposed on the surface. The tunnel contract calls

for operations on a three-shift basis seven days a week until completion of the project.

## Fluorspar Mine to Operate



An agreement has been made with Henry J. Kaiser to ship three carloads of fluorspar a month to Kaiser's steel smelter in Fontana, Calif., from the Tonto Fluorspar Mining Co.'s properties east of the Tonto Basin. Ervin E. Highwood and Tom Grantham are managing this project and about 10 men are employed at the mine.

## United Verde to Close

The United Verde Mine which has produced more than \$600,000,000 in copper will close down early in 1947 because of exhaustion of ore reserves. The late Senator William A. Clark began operations on this property in 1883 and since this time the United Verde at Jerome, Ariz., has produced better than 5 per cent of all of the copper coming from the state. The Phelps Dodge Corp. acquired the United Verde in 1935.

## Work Started in Placer



The famous Klamath hydraulic property near Orleans has been bought by M. C. Poetner, of Pacific, Mo., C. A. Thompson, of Mason, N. Y., and L. M. White, formerly of Washington, D. C. The new owners are repairing flumes and ditches and developing more water to complete operations for extensive gold dredging. These placers were worked by miners in the early days of the region and coarse gold and numerous nuggets were taken from the Klamath River by pioneer operators. It is reported that much of the ground adjacent to the old placers has been untouched and there are indications that there is ample value in the virgin Klamath gravels.

## Gold Mine Sold

The Italian mine at Drytown in Amador County has been sold to George L. Gaskell and Herbert G. Schweiger through William D. Tam, president of the Black Hills Mining Company. This new mine, located between the Plymouth-Empire on the north and the Fremont-Gover on the south, has an orebody over 300 ft. long and 225 ft. wide. This property operated until the war closed it and a government loan was offered on the mine by the RFC before the war.

It is equipped with a modern plant ready for operation with compressors, ore bins, crusher, ore feeder, ball mill, classifier, mechanical jig, four flotation cells and filter, all driven by individual electric motors. The new owners plan to hire crews at once to enlarge the mill and to develop the level next below the present tunnel.

### Manganese Operations Suspended

The Sunshine Mining Company has suspended manganese mining operations at the Crescent mine near Port Angeles, Wash. Twenty-eight thousand tons of 50 per cent ore were produced from the Crescent. This ore has all been purchased by and stockpiled for the United States Government.

### New Developments on the Columbia Lode

Ellis Mining Company and Consolidated Mining and Smelting Company of Canada have merged to explore one of the principal mineral veins of the Baker region. The North Pole, E. & E., Tabor Frac-

tion and Columbia mines, are included in this merger, the entire group operating on the development of Bourne mines in the Columbia lode area. Prior to 1915 Bourne mines were important gold producers.

### Alumina Plant to Continue Operation

The Salem Alumina Plant will continue operations until the end of the year. The plant at Salem was constructed for the purpose of testing out and developing a process for the commercial production of alumina from Northwestern clays, and it is reported that roughly \$5,000,000 was spent in construction and tuning up operations at the plant. Actually, the original purpose that the plant was designed for has not been followed, as in the past it has been making mostly ammonium sulphate.

### Dredging Operations Moved

Golden Dredging Company, a partnership consisting of George England, Harry Morse, Thomas Harris, Frank Kendall, and Jenkins Pryse, has moved its plant from Pine Creek in Baker County to the Middle Fork of the John Day River not far from Caribou Creek. A conventional 1½-yd. dragline and

washing plant comprises the equipment at present being used on the operation.

### Mills to Reopen

The Alaska Mining Co., Inc., has made arrangements to reopen the St. Paul Mill at Eva Creek, near Ester. Customs milling will be done at the plant until such time as operations commence on the company's ground at which time such work will be discontinued as the mill will be used for the company's own ore. Work has already commenced on repairing the mill, the tramway, and the ore bins outside. The mill has not been operating for the past four years but is in fairly good shape.

### Lucky Nell Development Continued

Development work on the Lucky Nell mine is continuing and road building is now in progress near Ketchikan. Homer H. Tilley, Tacoma mining man, arrived at the Lucky Nell recently and spent two months or more on the property at Hollis. The Lucky Nell is located about 7½ miles from the beach and considerable development work was done there a number of years ago.

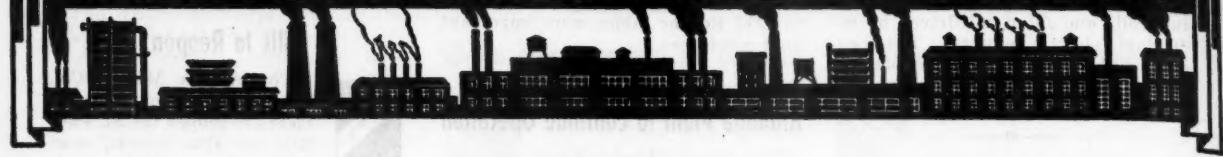


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## Sullivan AW-80 Air-Winch

The Sullivan Division of the Joy Manufacturing Company, announces a new, small, lightweight, air-powered hoist, the "Air-Winch," capable of lifting 500 lbs., yet weighing only 85 lbs. It has a rope capacity of 150 ft. of  $\frac{1}{4}$ -in. rope, is only 18 ins. long, 9 $\frac{1}{2}$  ins. high and 11 ins. wide. The "Air-Winch" is powered by an extremely simple, four-cylinder, reversible, piston-type air motor and can be used in many different ways about the average mine or on the construction job.

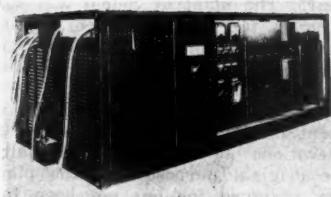
Light enough for one man to move quickly from place to place, the AW-80 "Air-Winch" can be mounted in any position on car, timber, column, or bar. Regular equipment includes a set of clamps for column or bar mounting but chains or common drift bolts may be used to secure winch if desired. The control is positive yet sensitive and timbers can be lifted exactly into place. A conveniently operated brake-lever holds the load firmly and prevents drum from spinning.

The unit can be used to hoist and lower machines and materials when driving a raise. Dragging blocks and scrapers, hauling slushers into place, lifting and dragging timbers, pulling large jumbos or mine cars and moving large boulders are only a few of the many applications for this compact unit. Ask for bulletin No. 76-H, Sullivan Division, Joy Manufacturing Company, Michigan City, Ind.

## GE Redesigns Line of Portable Rectifiers for Mining Service

The General Electric Company, Schenectady, N. Y., has announced the redesign of its line of portable, sealed-ignitron, mercury-arc rectifiers for mining service. The new equipment is a completely integrated, compact, a.c. to d.c. substation, mounted on mine-car-type wheels so that it can easily follow the load center as the working face moves away from the portal. Consisting of an a.c. switchgear car, transformer car, and rectifier car, it is only 48 in. high.

The new design, available in ratings from 75 to 750 kw., gives added protection against mine dust and dirt, and increased safety for personnel. All live parts are located behind a dead front.

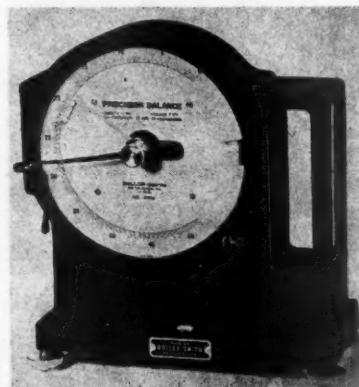


The rectifier car contains the necessary sealed ignitrons, static magnetic firing circuit, d.c. automatic-reclosing switchgear equipment, rectifier d.c. voltage regulator, and water-to-air heat exchanger. The rectifier-transformer, which is insulated with Pyranol\*, is mounted on wheels and contains a builtin interphase transformer and a surge absorber which affords protection against switching surges. The a.c. switchgear car contains the incoming-line a.c. magne-blast circuit breaker, the a.c. automatic-reclosing device, Pyranol-filled control power transformer, and necessary protective devices.

Further information is given in GEA 4047A.

\* Reg. U. S. Pat. Off.

## Rapid Precision Balance



An improved 0.500 mg. precision balance with large direct reading dial for rapid repeat weighing is announced by Roller-Smith, Bethlehem, Pa. Suitable for production, production control, assaying and analytical work. Used in lamp and radio tube manufacture, watchmaking, paint, chemical, mining, textile and manufacturing

## Link-Belt Establishes Three New Sales Offices

Link-Belt Company, Chicago, manufacturers of materials handling and mechanical power transmission machinery, announce the opening of three new sales offices in order to render a better post-war service in the respective localities:

At Moline, Ill., 1608 Fifth Avenue, with M. J. Parykaza, district sales engineer, in charge; at Cincinnati, Ohio, 730 Temple Bar Building, Main and Court Streets, Cincinnati 2, with L. R. Clark, district sales engineer, in charge and in Birmingham, Ala., 823 Comer Building, 2100 Second Avenue, N., Birmingham 3, with C. C. Wiley, district sales engineer, in charge.

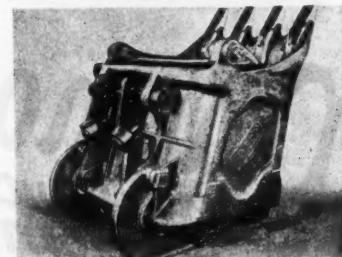


## All-Manganese Steel Welded Type Dippers Announced by AMSCO

To meet demands for a dumper with optimum durability and over-all weight, the American Manganese Steel Division of the American Brake Shoe Co., Chicago Heights, Ill., has introduced the Amesco all-manganese steel welded type dumper. When fitted with



C-801-C. Capacities  $\frac{3}{4}$  yd. to 2 yds. inclusive



R-783. Capacities over 2 yds.

a door and bail of adequately strong design, this dipper is somewhat lighter in weight than the Amsco patented renewable lip dipper.

The Amsco all-manganese steel welded type dipper is made in capacities of  $\frac{1}{4}$ -cu.-yd. and up. Sizes  $\frac{1}{4}$ -yd. to 2-yd. are made in two body pieces, front and back. Sizes over 2-yd. are made in four pieces; front, back and two side plates.

More information on this dipper may be obtained from American Manganese Steel Division of American Brake Shoe Co., Chicago Heights, Ill.

### Kennametal Establishes National Organization

W. D. Turnbull, general sales manager of Kennametal Inc., Latrobe, Pa., announces the establishment of a national organization for selling and servicing Kennametal-tipped mining tools. Under this new unified set-up, the mining territory of the United States is divided into four areas, each under a district supervisor.



W. D. Turnbull

headquarters are at the Latrobe office.

District Two—the West Virginia district—comprises West Virginia, Virginia, Tennessee, Alabama, and the mining section of eastern Kentucky, under District Supervisor Orval Robson, whose address is 95 So. Washington Street, Waynesburg, Pa.

District Three—the Illinois district—includes Illinois, Indiana, Kansas, Missouri, Iowa, and mining section of western Kentucky, under District Supervisor Robert A. Thompson, whose address is Franklin Hotel, Benton, Ill.

District Four—the Rocky Mountain district—consists of Montana, Idaho, Nevada, Arizona, Utah, Wyoming, Colorado, and New Mexico, under District Supervisor Orville Phipps, whose address is P. O. Box 1716, Denver, Colo.

Each district supervisor has, on his staff, a group of representatives, who are practical mining men, thoroughly trained in the proper selection, application, and maintenance of Kennametal tools.

Mr. Turnbull states that this new sales and service arrangement assures all users of maximum service

The appointment of Fred J. Maple, manager of exhibits, is announced by E. C. Low, vice president in charge of sales, John A. Roebling's Sons Company, Trenton, N. J. Mr. Maple, who was formerly manager of advertising, has long been active in this field and is a member of the board of directors, Exhibitors Advisory Council, Inc. Due to the postwar expansion of this medium, he will devote his entire time to this new department.

The appointment of Albert Neroni to succeed Mr. Maple as manager of advertising is also announced. Mr. Neroni, who attended Columbia University and is a



Albert Neroni

graduate of the University of Alabama, brings to Roebling a fine background both in industrial advertising and in sales development. He is widely known in advertising circles, having formerly been assistant manager of advertising for Anaconda Wire and Cable Co., Inc.

\* \* \*

Robins Conveyors, Inc., Passaic, N. J., manufacturers of materials handling machinery, announces that its Philadelphia office, formerly at 12 South 12th Street, will be consolidated with that of its parent organization, Hewitt-Robins Incorporated at 401

from Kennametal mining tools. Because Kennametal-tipped tools are radically different from former types, it is pointed out that Kennametal's field organization, readily available, can aid in increasing output by showing how production can be better balanced by expediting face preparation.

Kennametal Inc. recently introduced a new line of plug drill bits and core drill bits for exploratory drilling, new sizes in rotary bits for drilling in underground and surface mines, and an expanded line of undercutter bits, suitable for use in practically all commonly-used types of chains.

### —Announcements—

North Broad Street, Philadelphia 8, Pa., effective September 1.

\* \* \*

R. C. Osgood, chief engineer and manager of the hoist division, received special recognition as a part of the Naval Ordnance Development Award recently conferred on Sullivan Division of Joy Manufacturing Company. J. A. Drain, vice president in charge of engineering for Joy Manufacturing Company, was also given special recognition. The work of the late Alton Hilliard, assistant to Mr. Osgood during the many months of difficult engineering work, was recognized in a similar award to his widow. The Individual Award consists of a certificate in appreciation of exceptional service to naval ordnance development, a lapel emblem and a letter of appreciation from the chief of the Bureau of Ordnance.

Mr. Morrow, president of the Joy Manufacturing Company, revealed that the award was for distinguished service to the research and development of naval ordnance and in particular for outstanding contribution to the development of an electric bomb hoist.

\* \* \*

Norman E. Palmer, general sales manager of the Cummins Engine Company, Inc., Columbus, Ind., has announced the appointment of Paul Merkert, Jr., and Robert Miller to the Cummins sales engineering staff.

Both Mr. Merkert and Mr. Miller joined the Cummins company upon their release from active duty with the United States Navy. Mr. Merkert, a native of Fort Wayne, served almost two years with the Navy and for 14 months was air officer aboard a seaplane tender in the Pacific. Mr. Miller recently was released from active duty with the rank of lieutenant commander. He completed his tour of duty in China.

### Electric Storage Battery Buys Joseph Stokes Rubber

The Electric Storage Battery Co. recently announced the purchase of the property, equipment, inventories and accounts receivable of the Joseph Stokes Rubber Co., of Trenton, N. J., from the Thermod Co.

S. W. Rolph, executive vice president of Electric Storage Battery, in announcing the purchase, said the business will henceforth be conducted by the Stokes Molded Products Co., which will operate the plant and will produce the same hard rubber and bakelite products manufactured by the Joseph Stokes Rubber Company.



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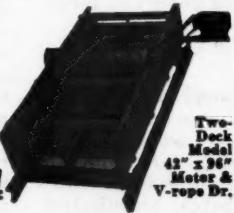
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DRILLS FOR INSIDE MINE DRILLING..

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**MOTT CORE DRILLING CO.**

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# MEET A FAST-WORKING, HARD-SLUGGING NEWCOMER



You'll find the WPM Drifter, newest of the famous Blue Brutes, has the speed, punch and balance of a real champion — at all weights. Look at a few of the features that give it "the edge" over the field:

All moving parts of the Pneu-Motor feed are enclosed in oil and consolidated in the Drifter, making a single compact unit . . . Simple spur gears, instead of old-fashioned internal or planetary types . . . No ratchets, pawls or springs . . . Only one air hose . . . Pneu-Motor easily dismantled without taking Drifter apart . . . Standardized mountings take all three sizes of WPM Drifters.

These design advantages are making good in a big way. Reduced weight of each unit makes handling easier, while the balanced feed lessens recoil and provides smoother action. This better balance also

relieves stress and wear on the guide shell, stops excessive vibration and whipping. Control is easier, because feed and drifter controls are both located on the end of the drifter.

Here's unbeatable performance that pays off in faster drilling cycles, more footage with less effort, and all-around operating economy. That goes, too, for the other new Blue Brute Drifters — the WPMS (Pneu-Motor on shell) and WHC (Hand Crank) types. Each type comes in three cylinder sizes — 3", 3½" and 4" — covering the whole range of drifter jobs, yours included, in a way that proves there's more worth in Worthington.

*Write for literature describing the complete line of BLUE BRUTE Mining Equipment, including Drifters, Stopers and Hand Drills.*

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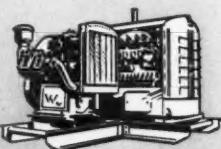
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Worthington's latest contributions to progress in the design and construction of mining equipment . . . prominently featured at the Denver Auditorium during the Metal Mining Convention and Exposition of the American Mining Congress, Sept. 9-12 inclusive.

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